

Figure 1 A

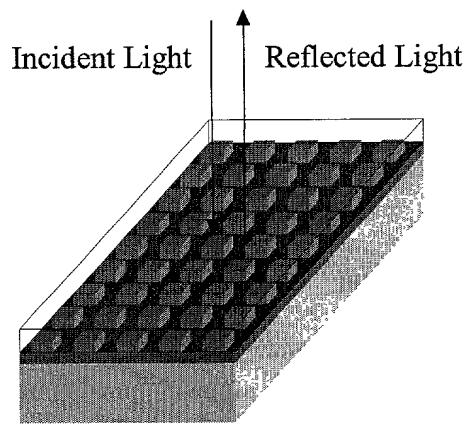


Figure 1 B

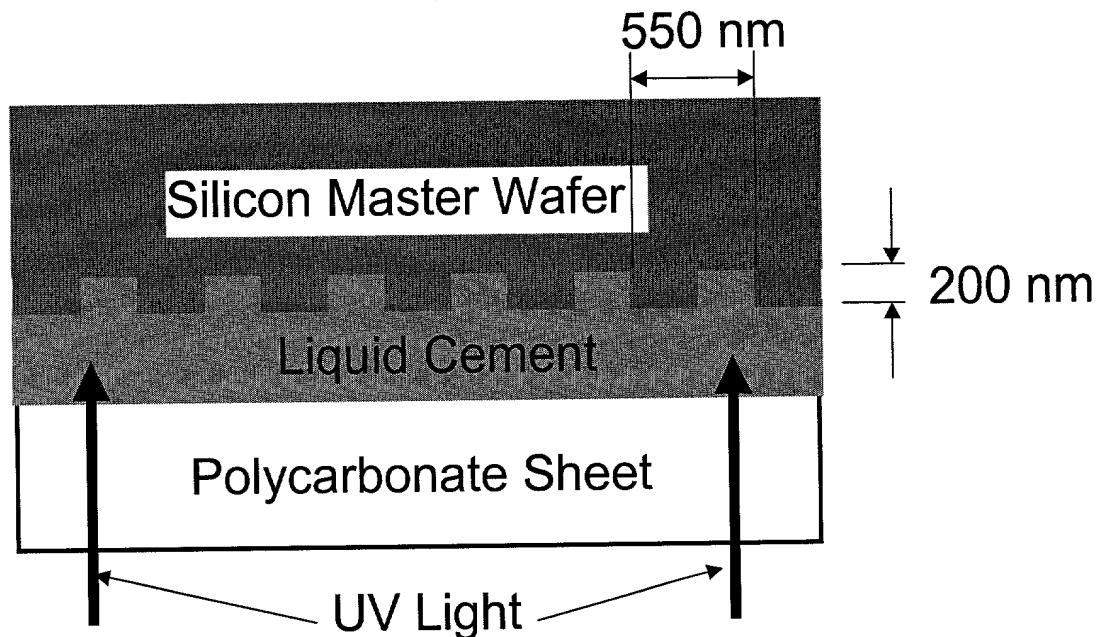


Fig. 1C

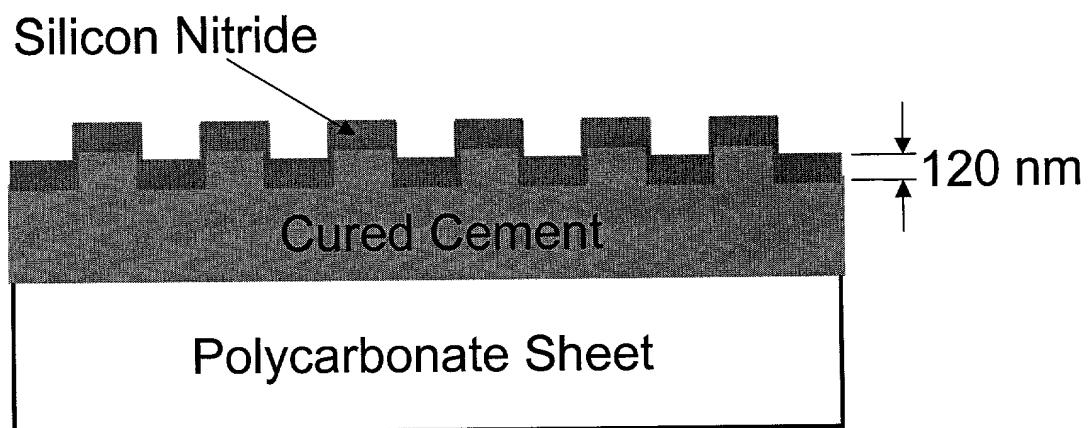


Fig. 1D

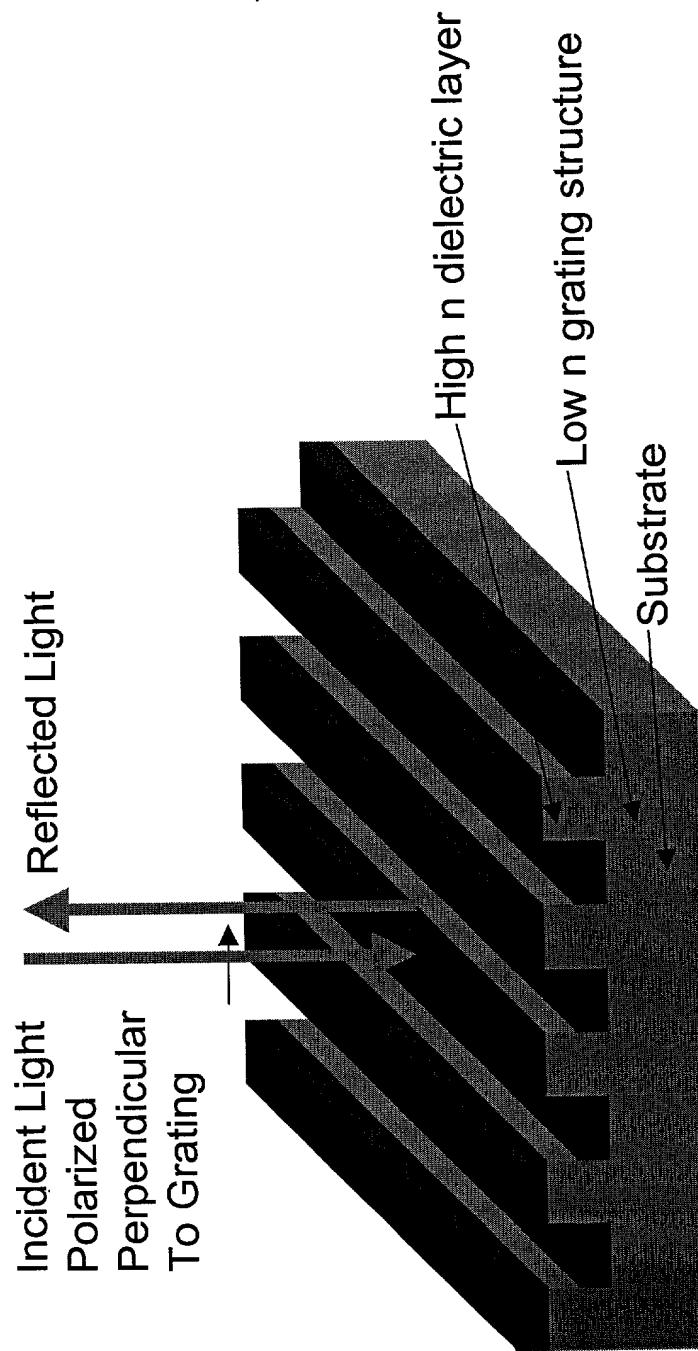


Fig. 2

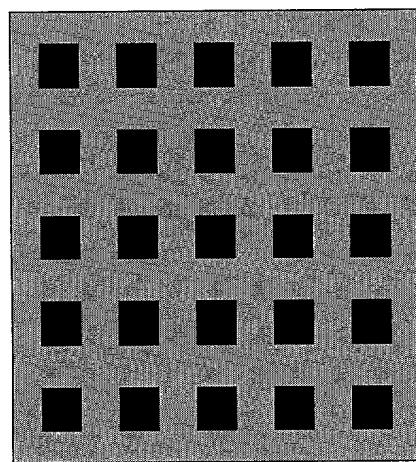


Figure 3A

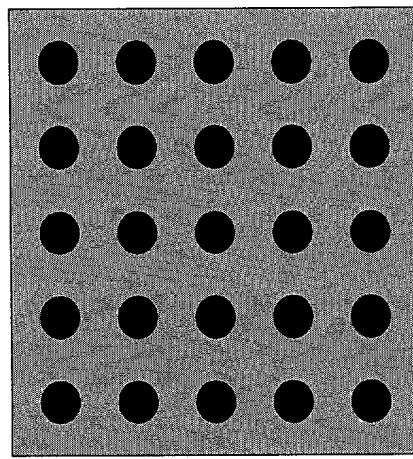


Figure 3B

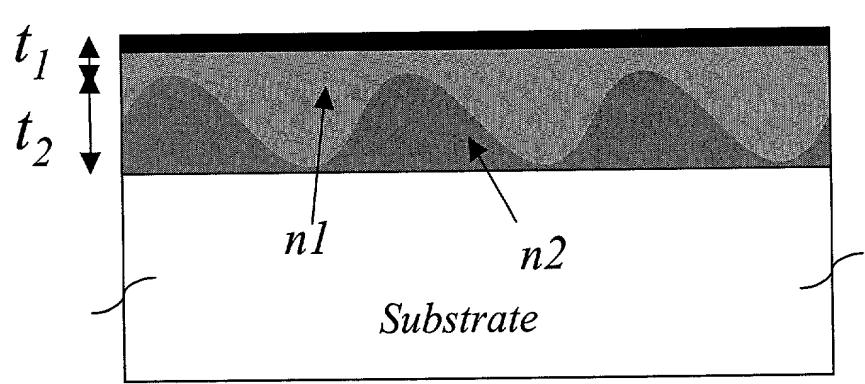


Figure 4

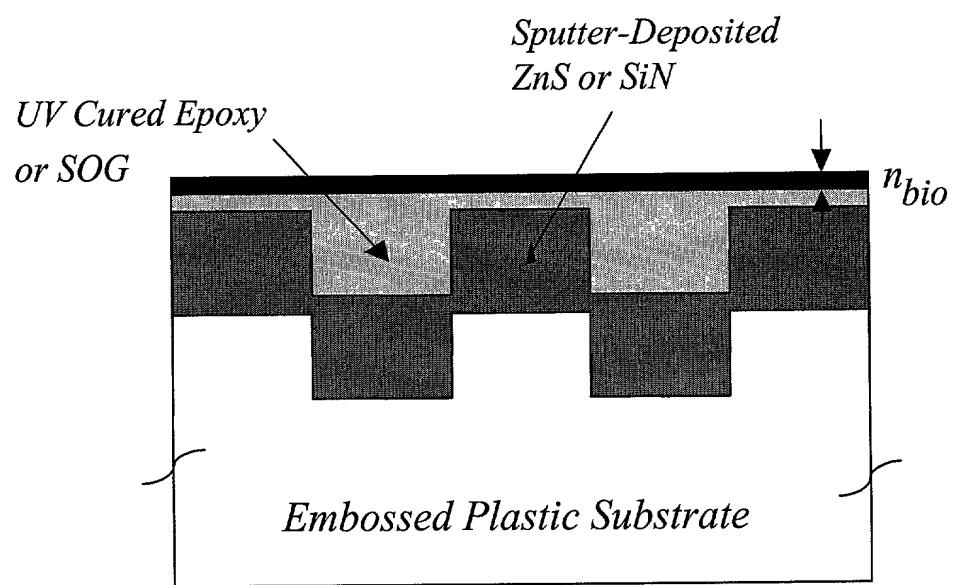


Figure 5

Amine

- Sulfo-succinimidyl-6-(biotinamido)hexanoate (Sulfo-NHS-LC-Biotin)
 - Streptavidin / avidin then biotinylated molecule
- N,N'-disuccinimidyl carbonate (DSC); • -NH₂, non-cleavable
- Dimethyl pimelimidate (DMP); • -NH₂, non-cleavable
- Dimethyl 3,3'-dithiobispropionimidate (DTBP); • -NH₂, cleavable
- 1-Ethyl-3-(3-Dimethylaminopropyl)carbodiimide Hydrochloride (EDC) and N-Hydroxysulfosuccinimide (Sulfo-NHS); • -COOH
- Sulfo-succinimidyl 6-[a-methyl-a-(2-pyridyl-dithio)toluamido] hexanoate (Sulfo-LC-SMPT); • -SH, cleavable
- N-(B-Maleimidopropoxy)succinimide ester (BMPS)
 - -SH₂, non-cleavable
- Sulfo-succinimidyl 4-[N-maleimidomethyl)cyclohexane-1-carboxylate (Sulfo-SMCC); • -SH, non-cleavable

Aldehyde

- Directly with aldehyde or first amino then aldehyde
 - -NH₂

Ni(II)

- Using Nitrilotriacetic acid (NTA) group, which forms a chelate with Ni(II)
 - His-tagged molecules

Figure 6

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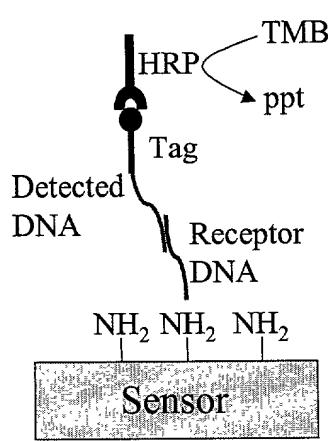


Figure 7A

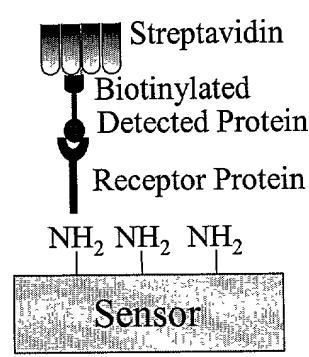


Figure 7B

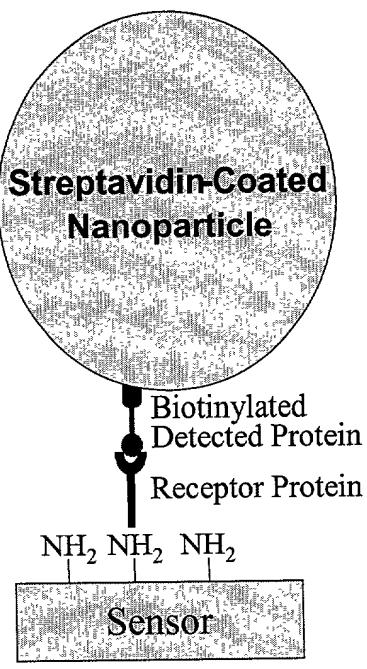


Figure 7C

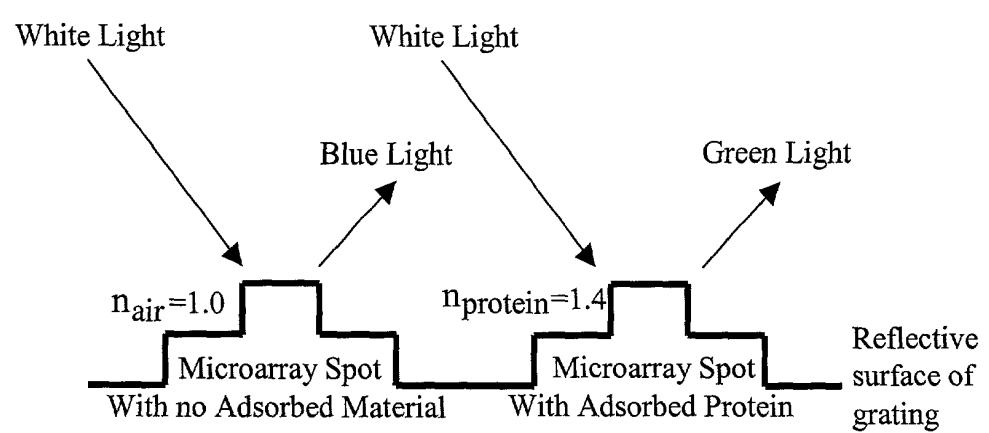


Figure 8

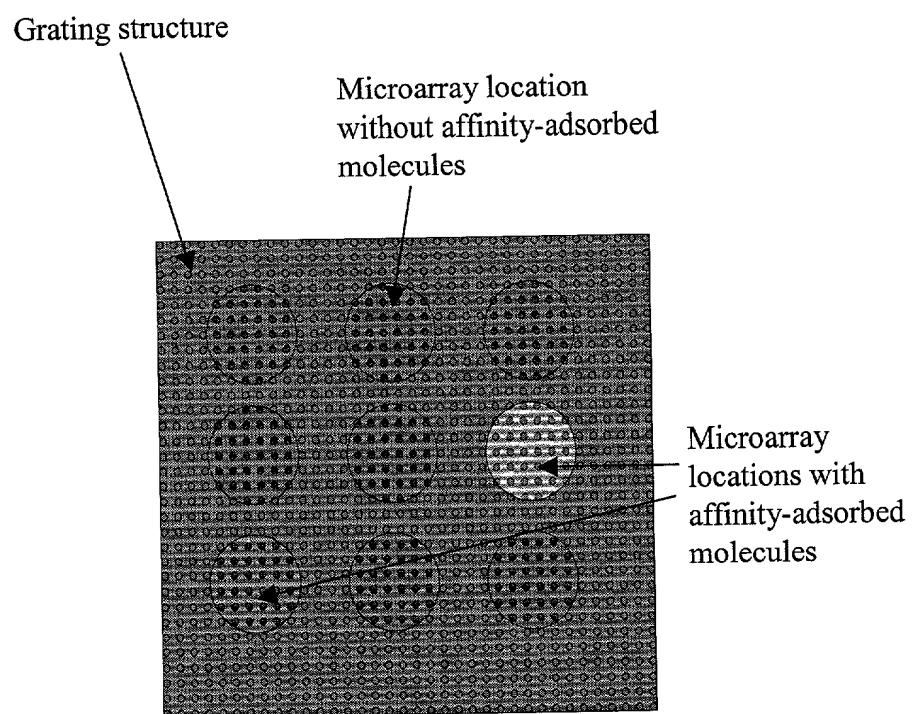


Figure 9

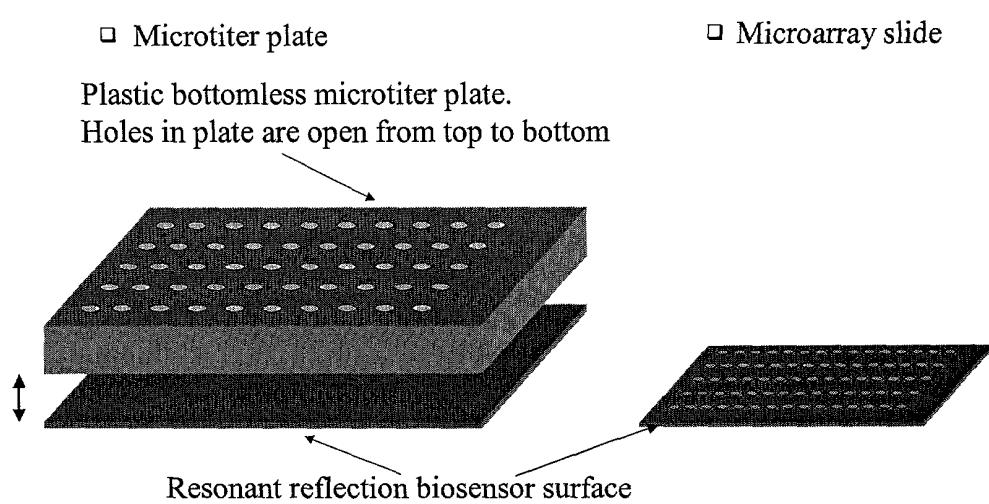


Figure 10A

Figure 10B

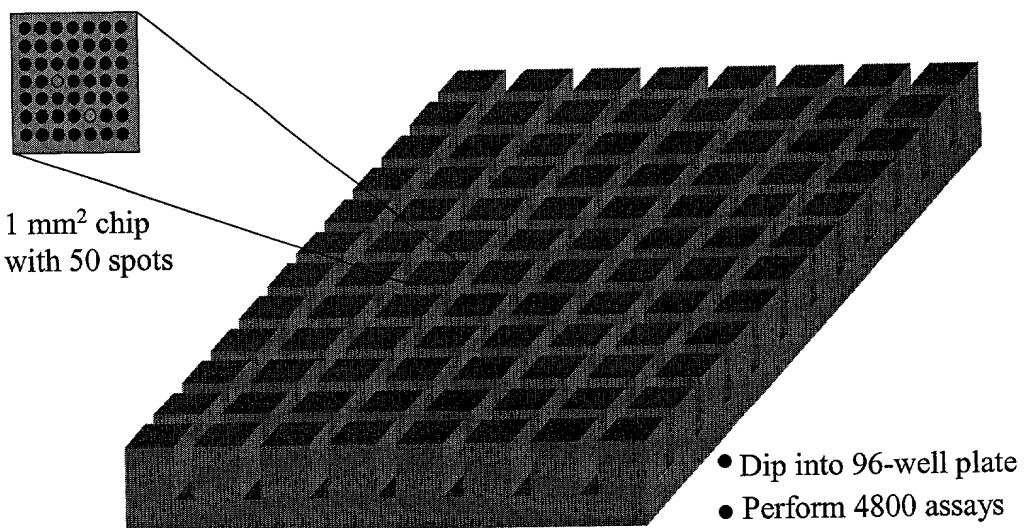


Figure 11

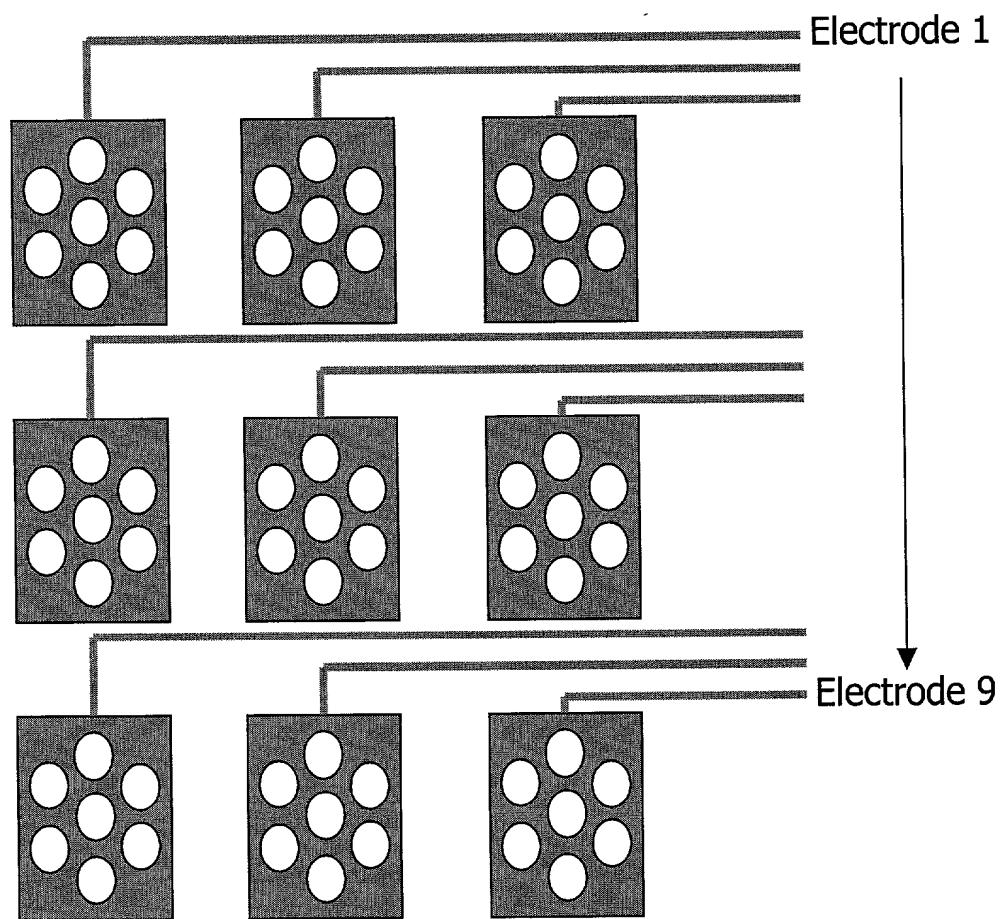
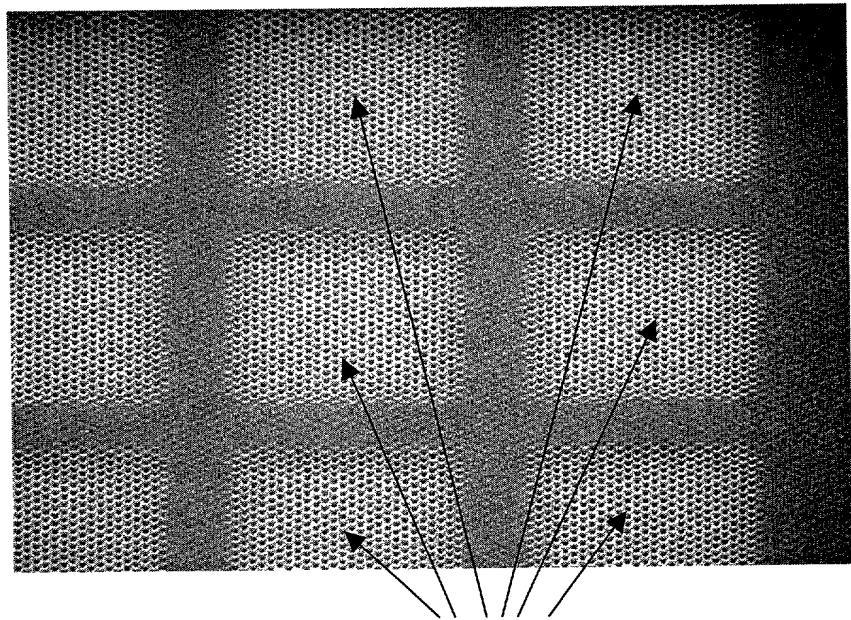


Figure 12



Separate electrode grating regions

Figure 13

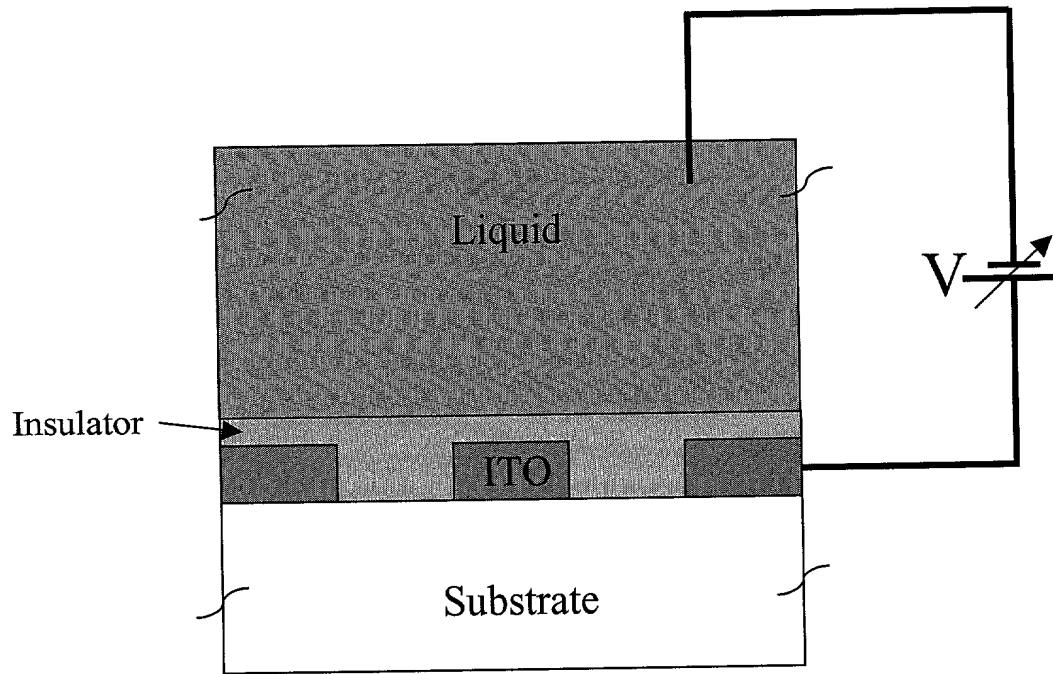


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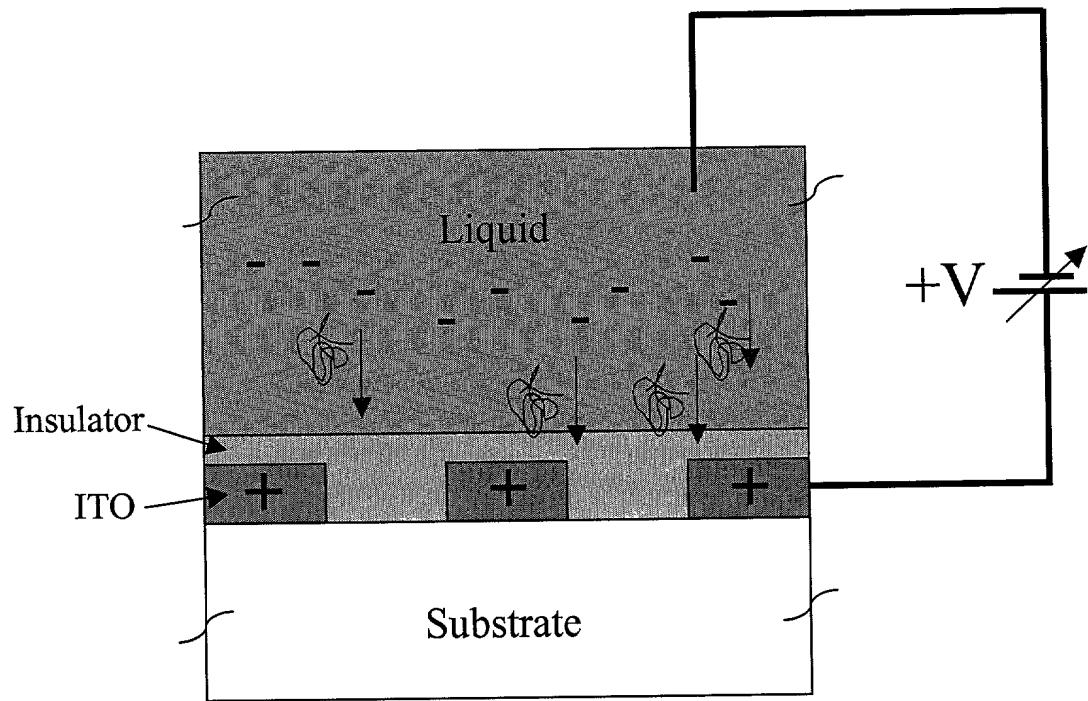


Figure 15

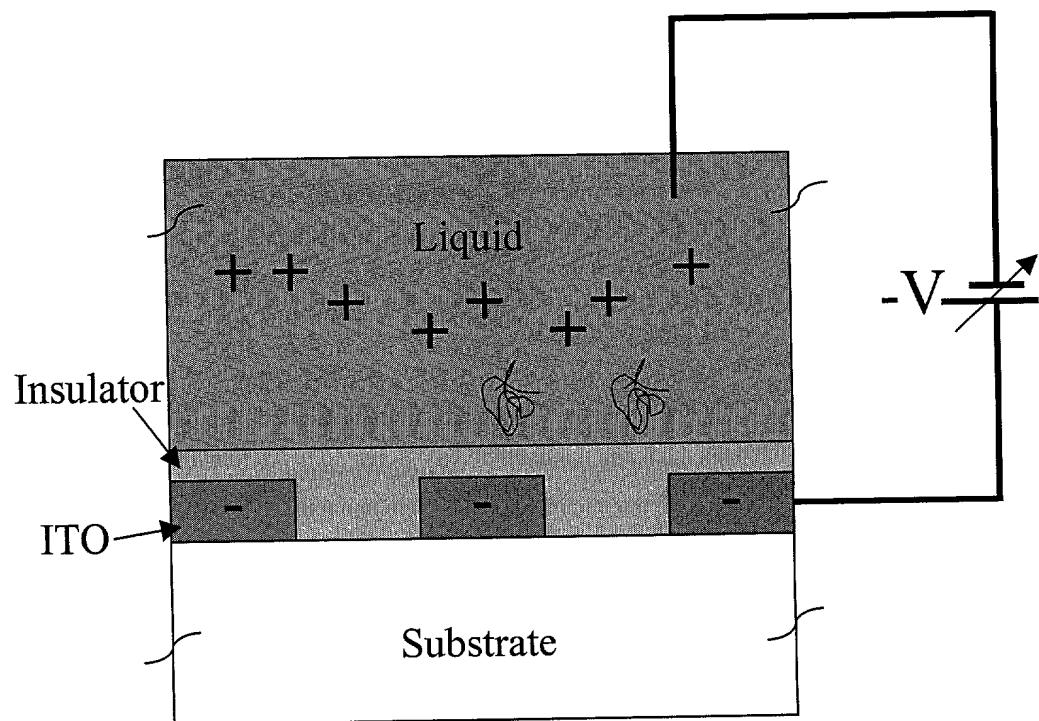


Figure 16

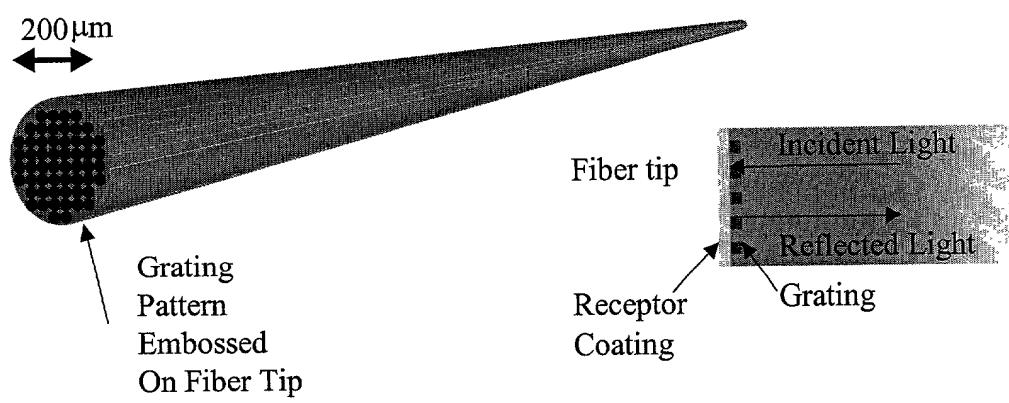


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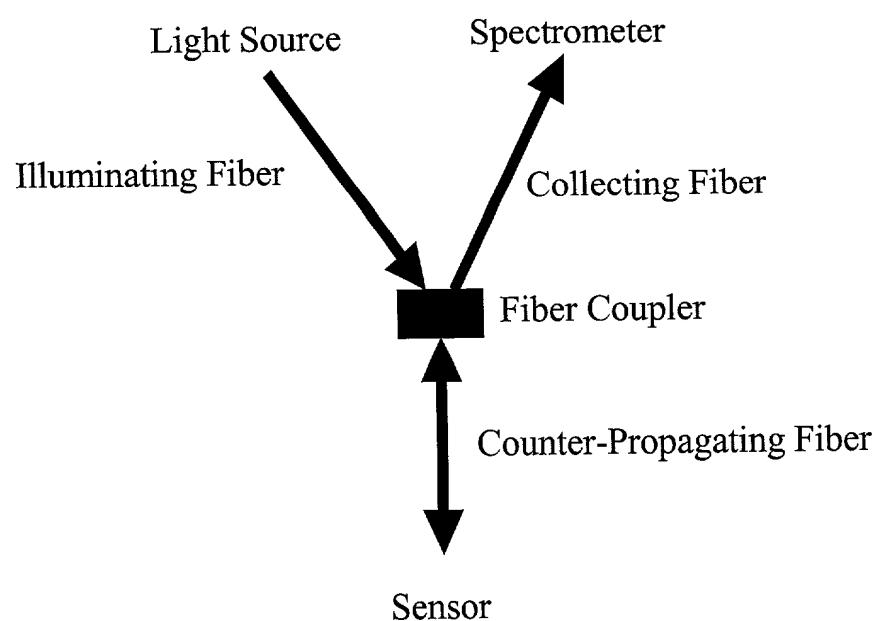


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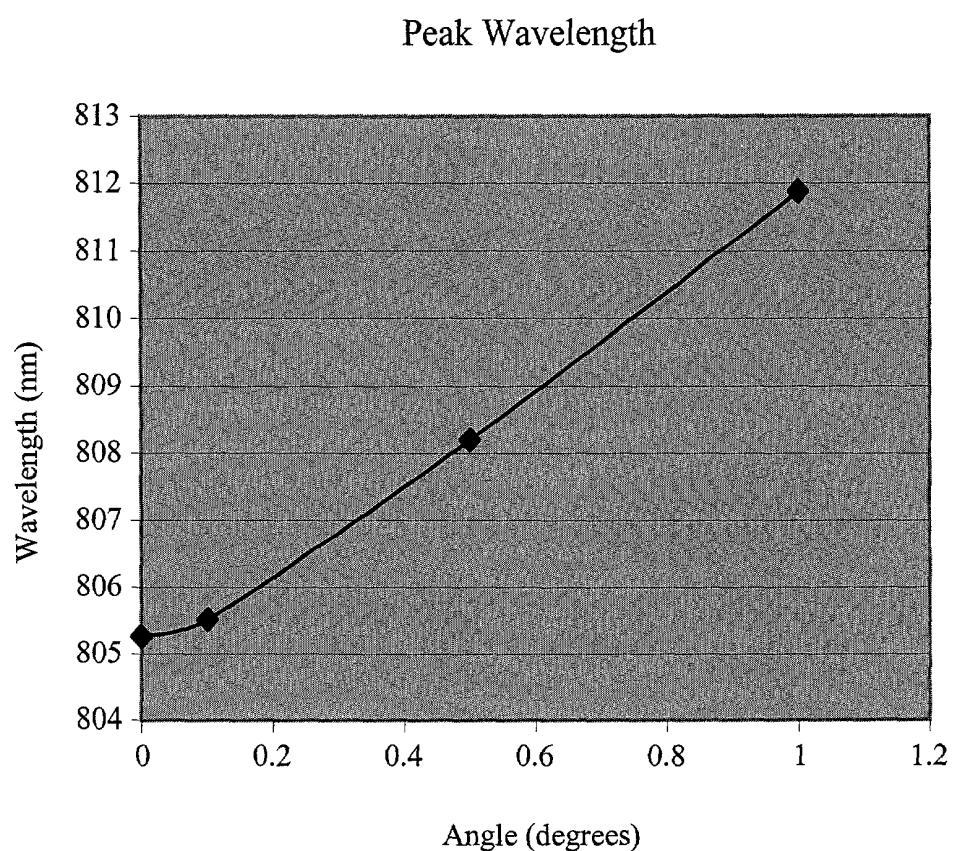


Figure 19

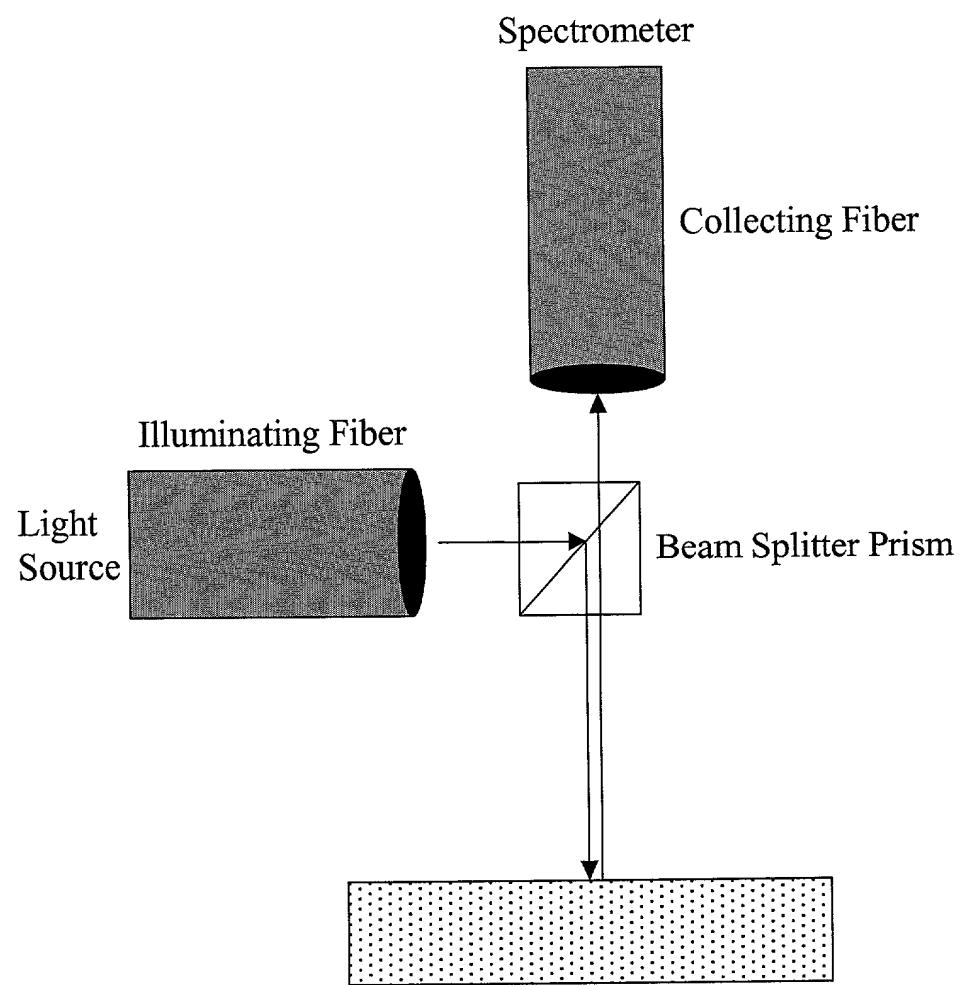


Figure 20

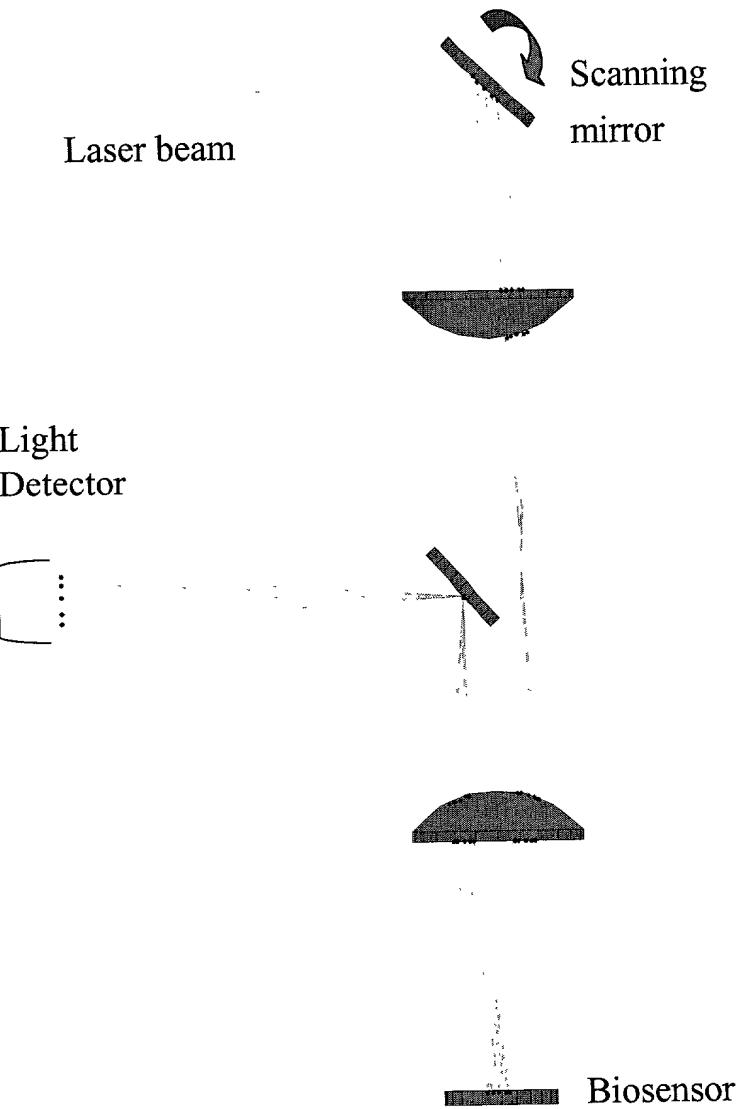


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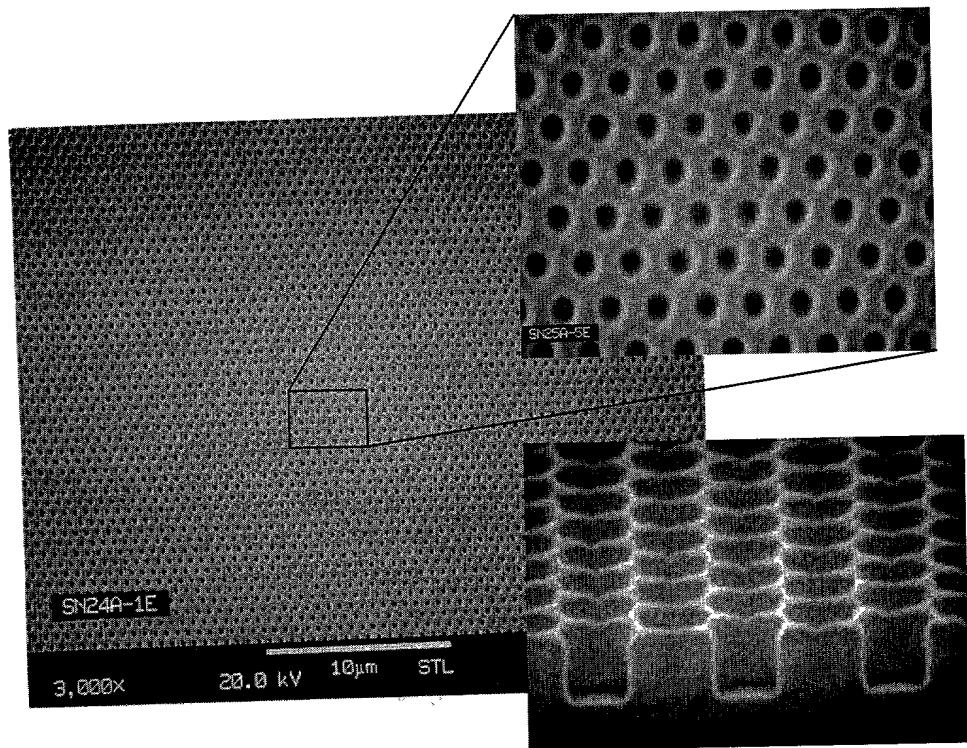


Figure 22

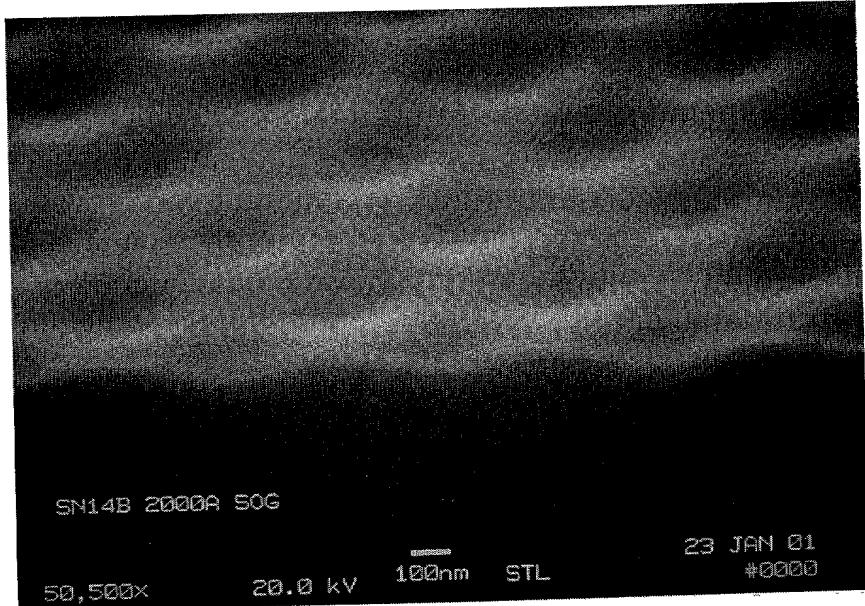


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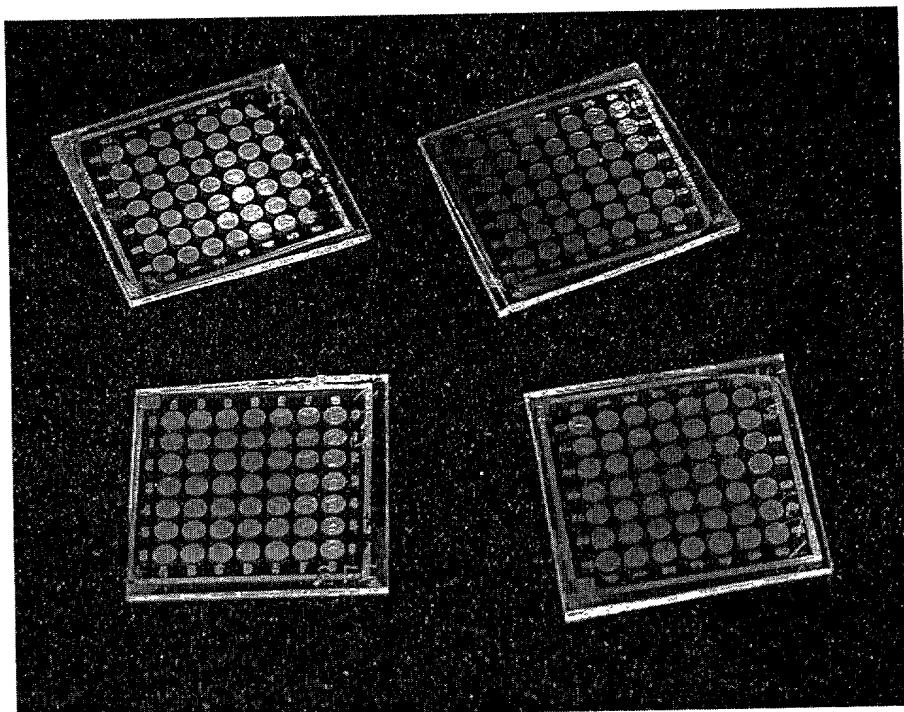


Figure 24

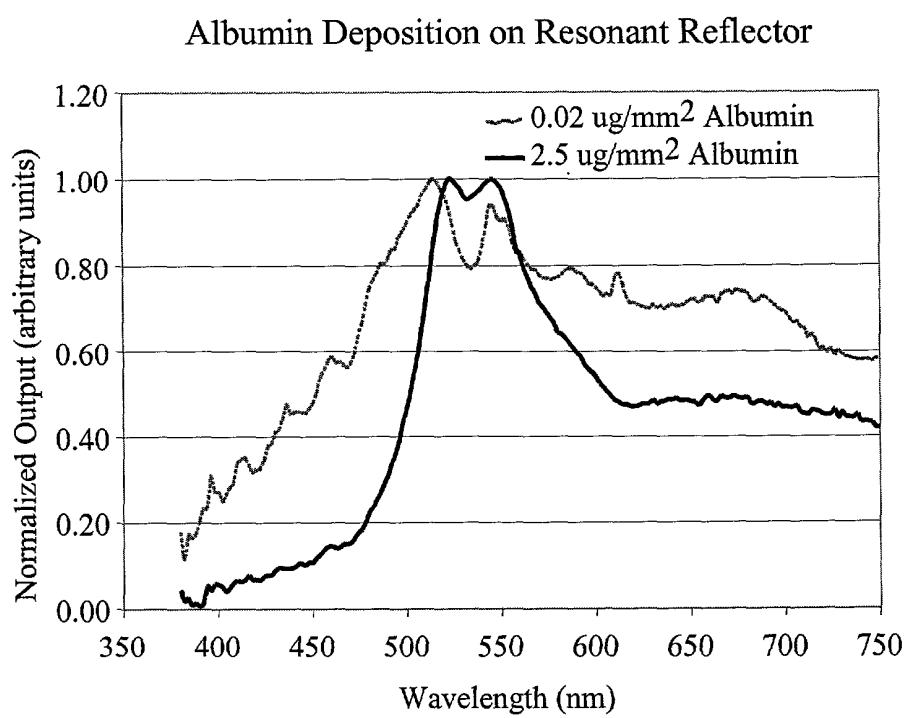


Figure 25

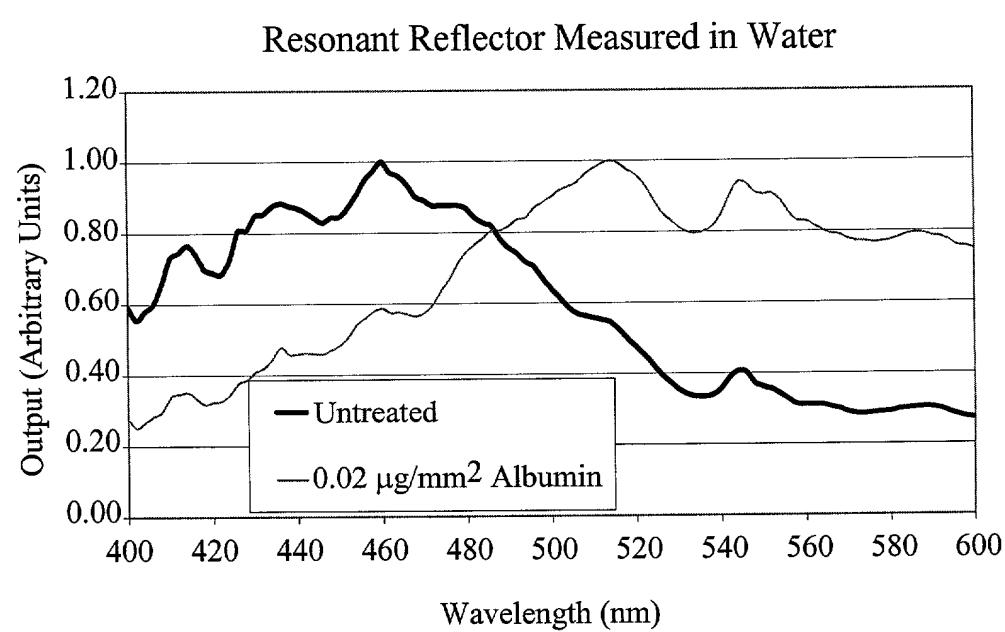


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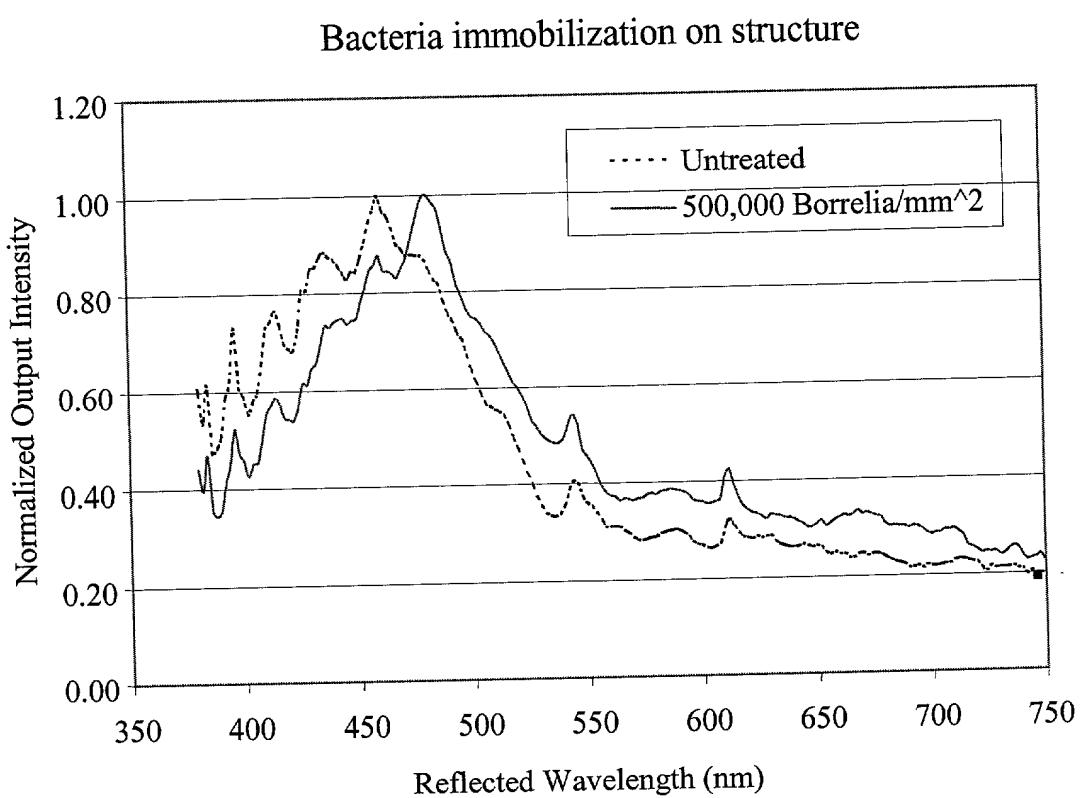


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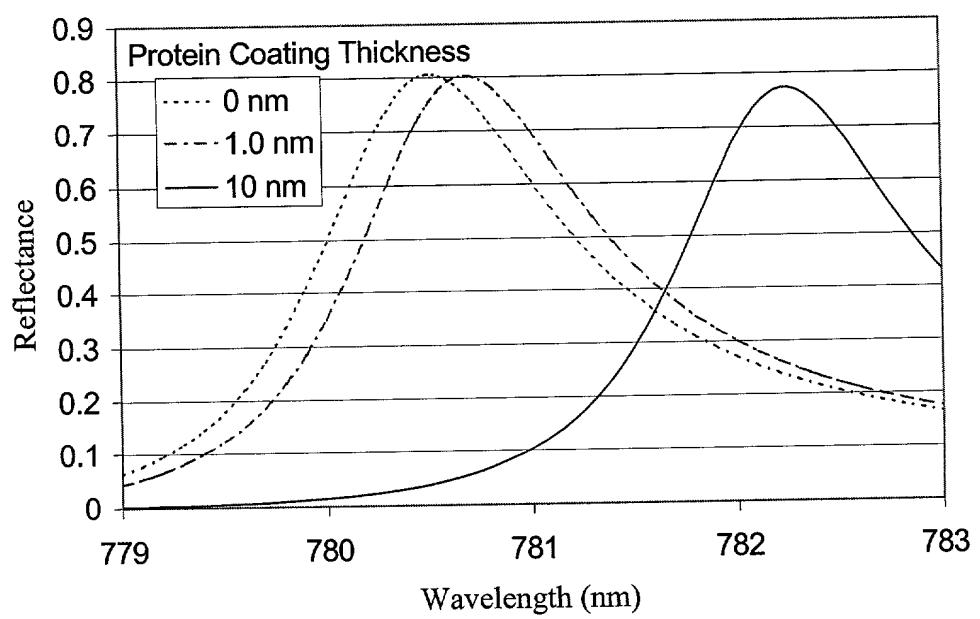


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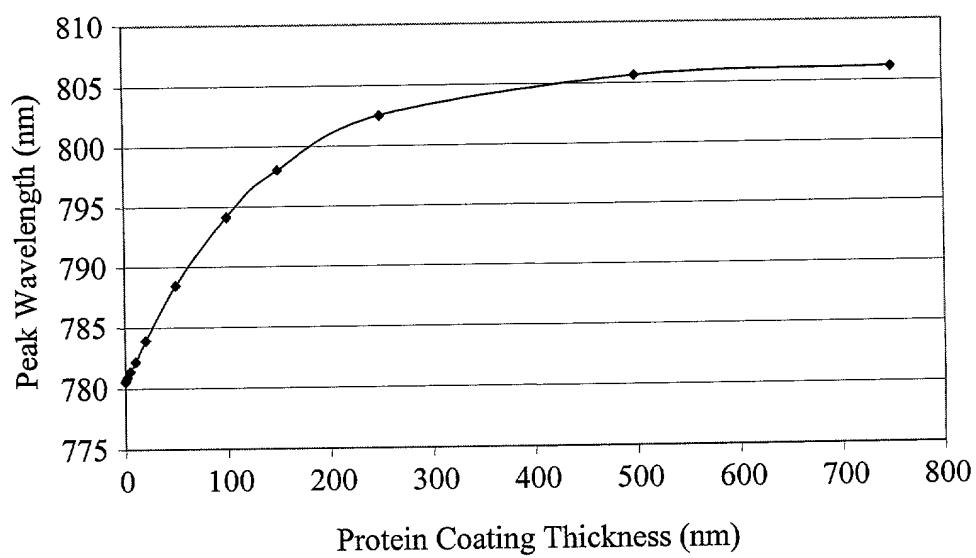


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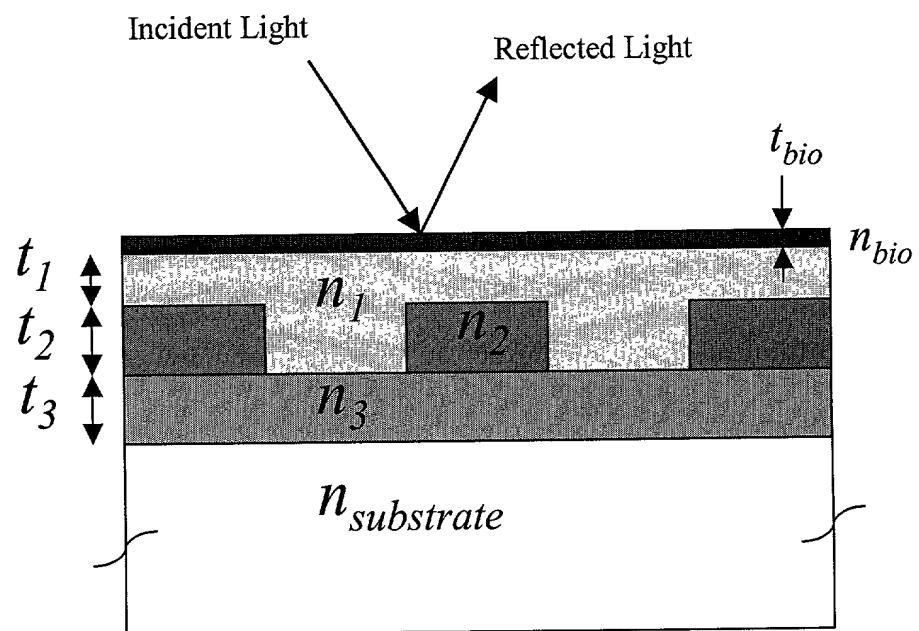


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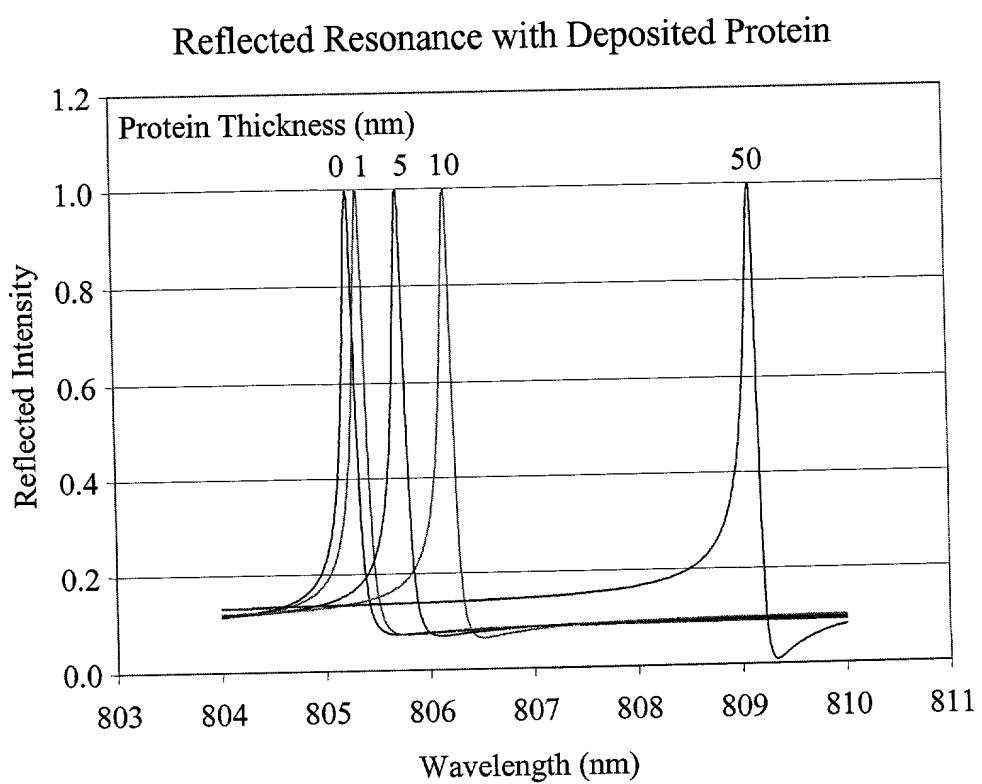


Figure 31

Resonant Peak Wavelength Dependence
on Deposited Protein Thickness

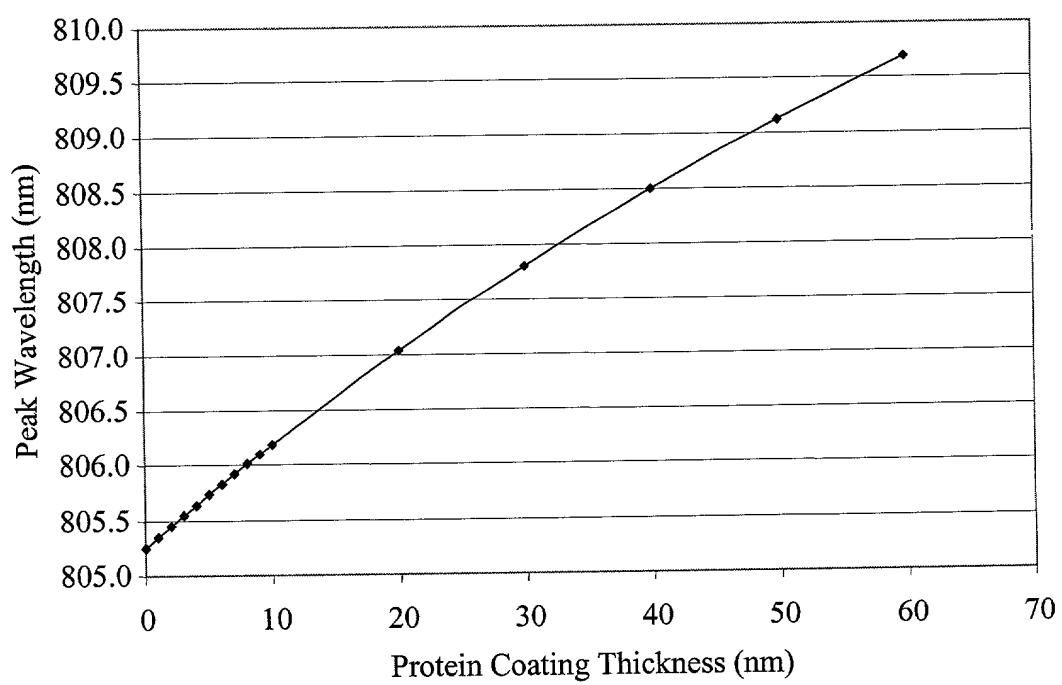


Figure 32

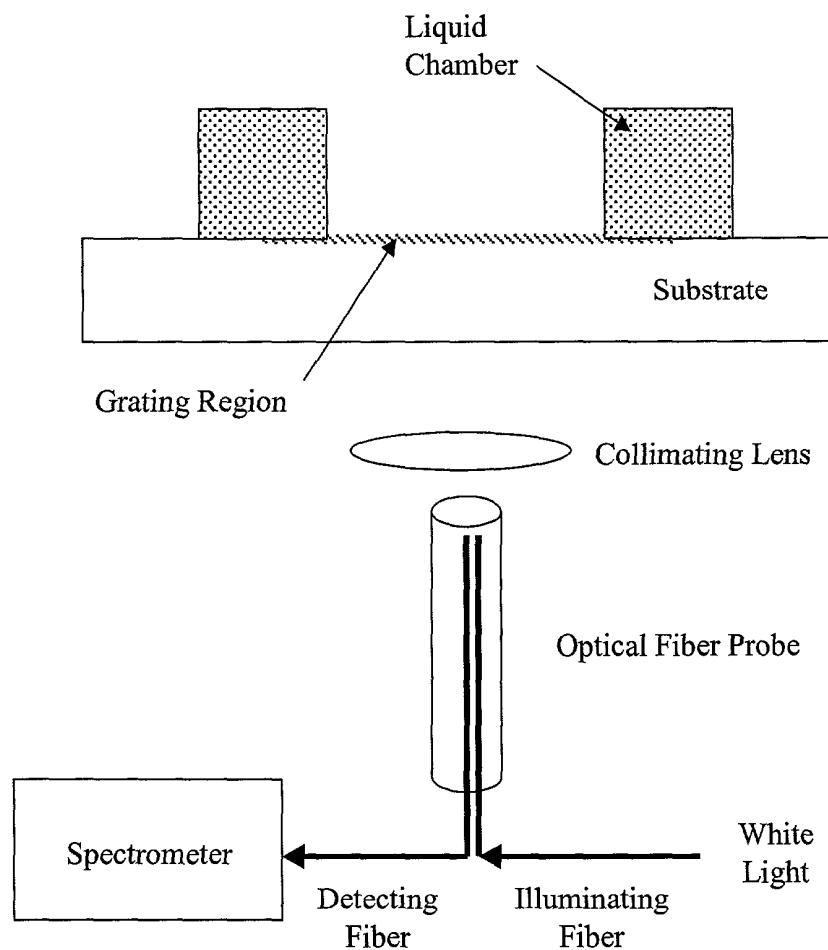


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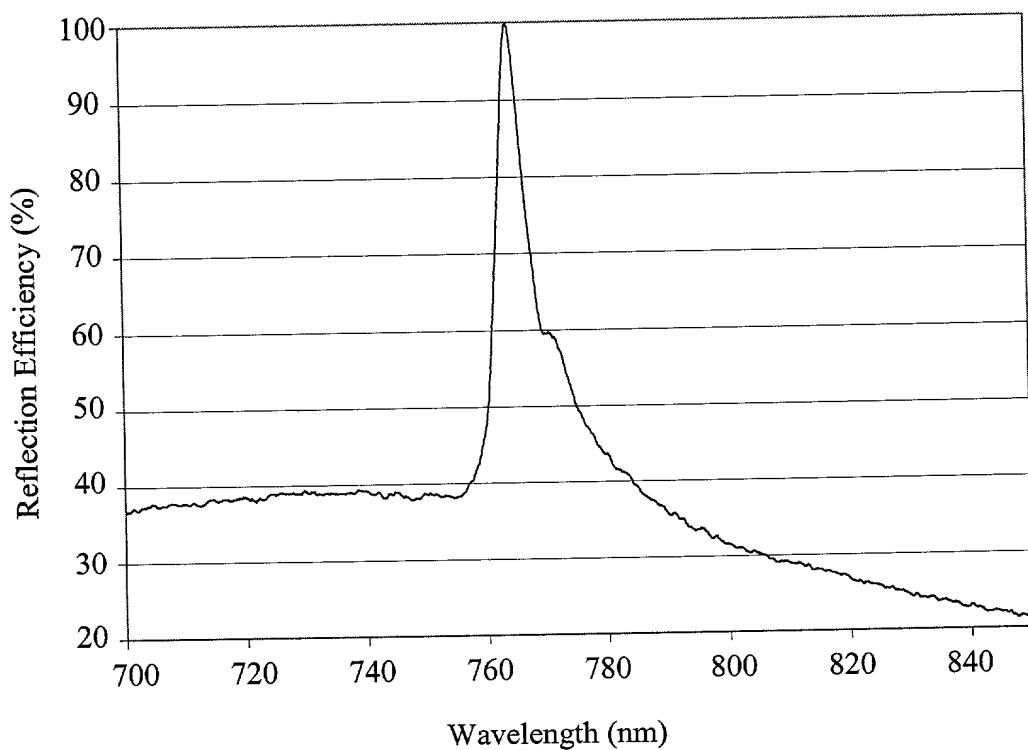


Figure 34

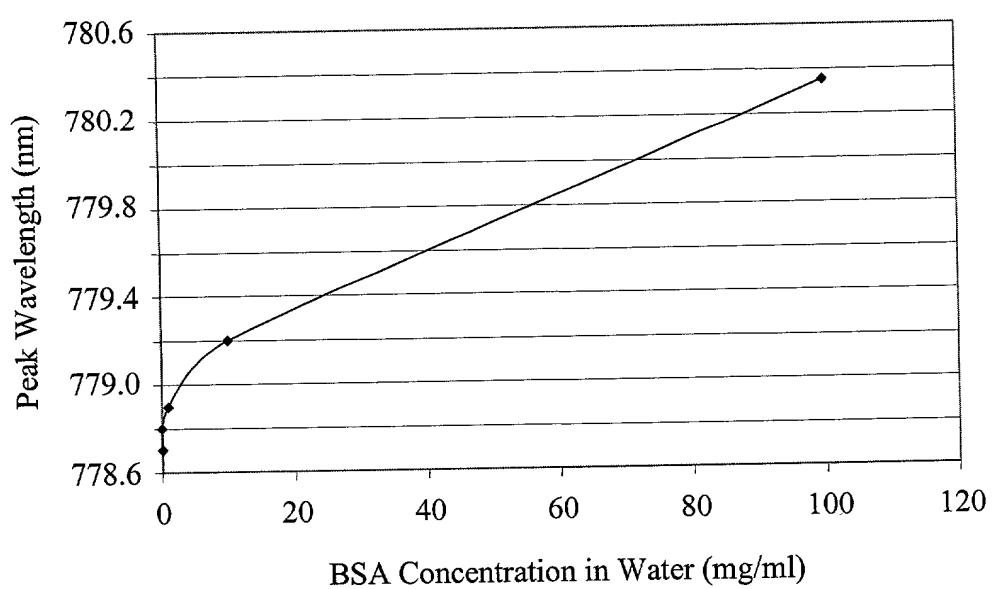


Figure 35

36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53

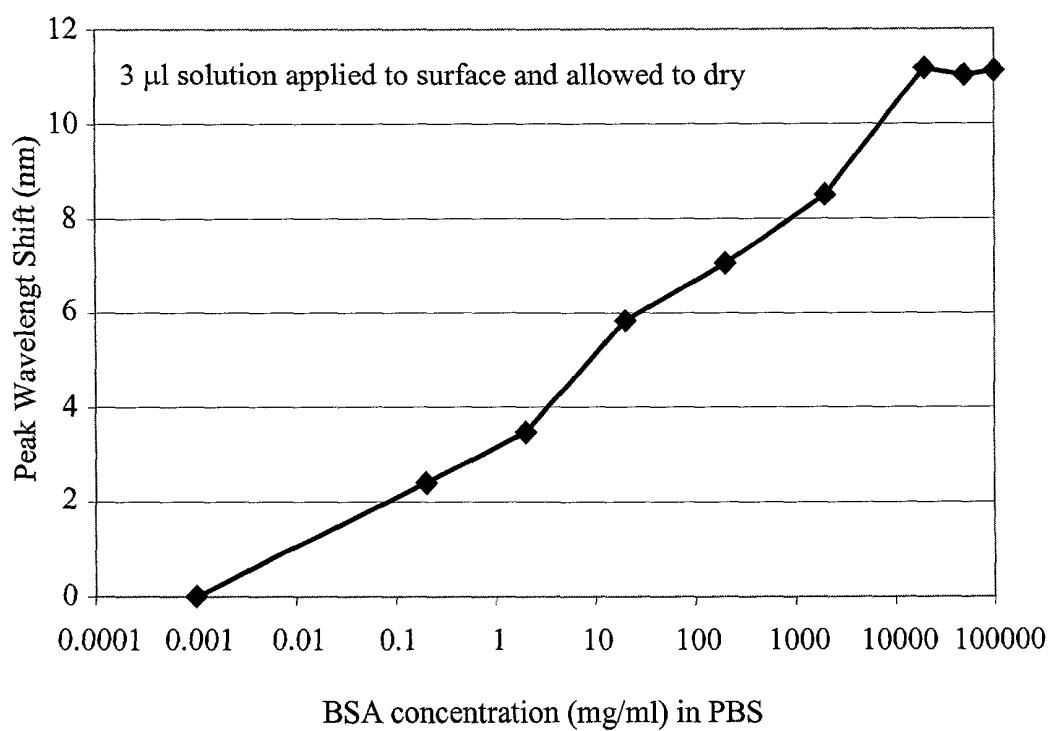


Figure 36

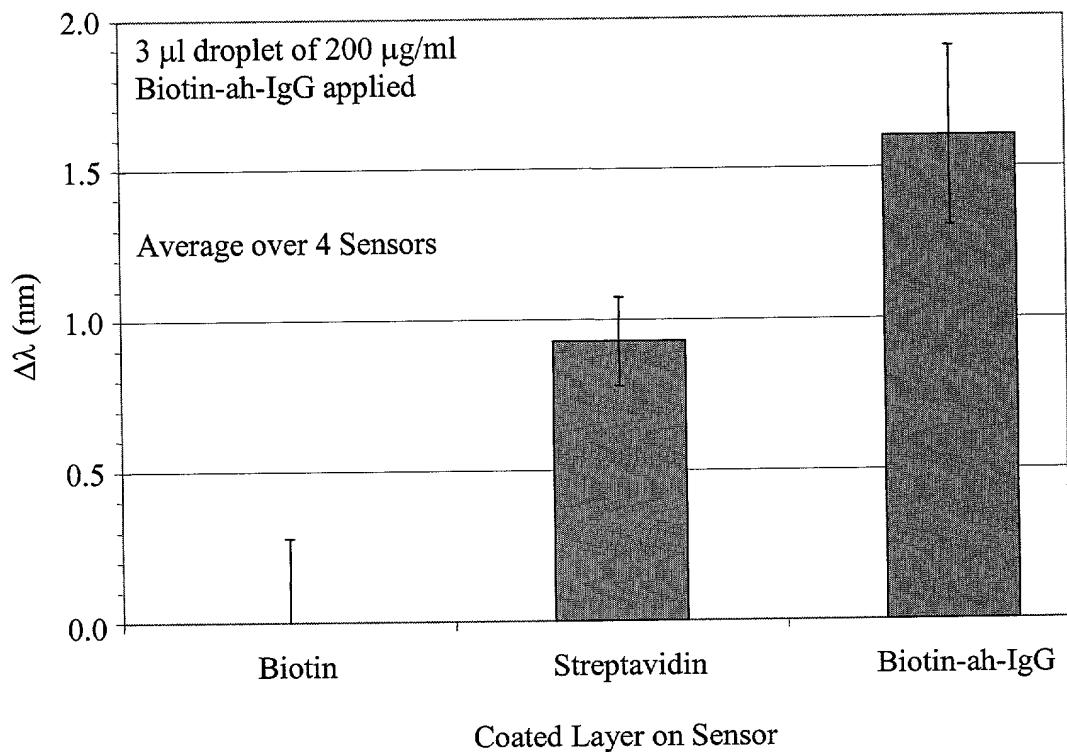


Figure 37A

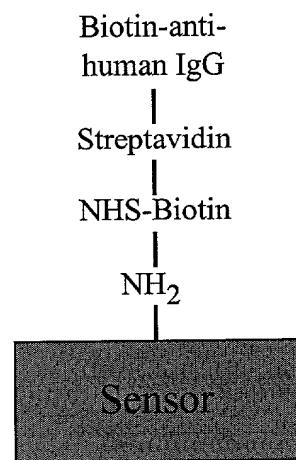


Figure 37B

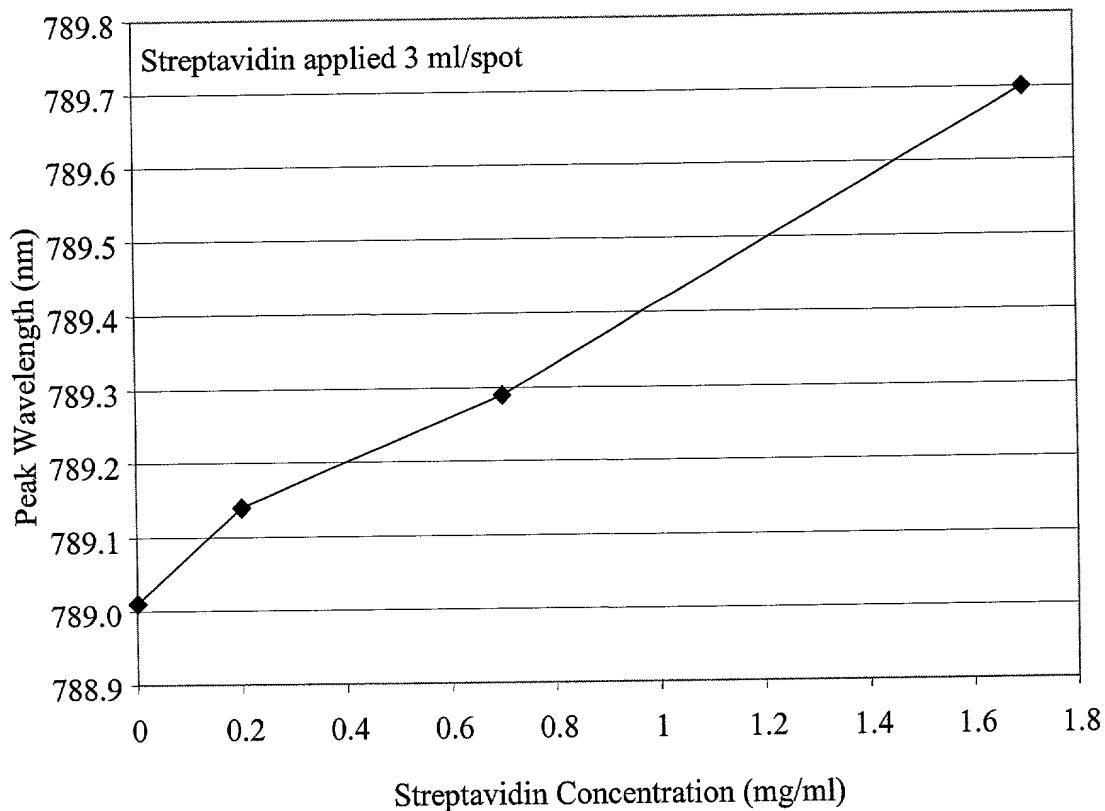


Figure 38A

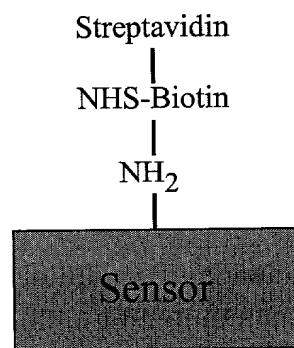


Figure 38B

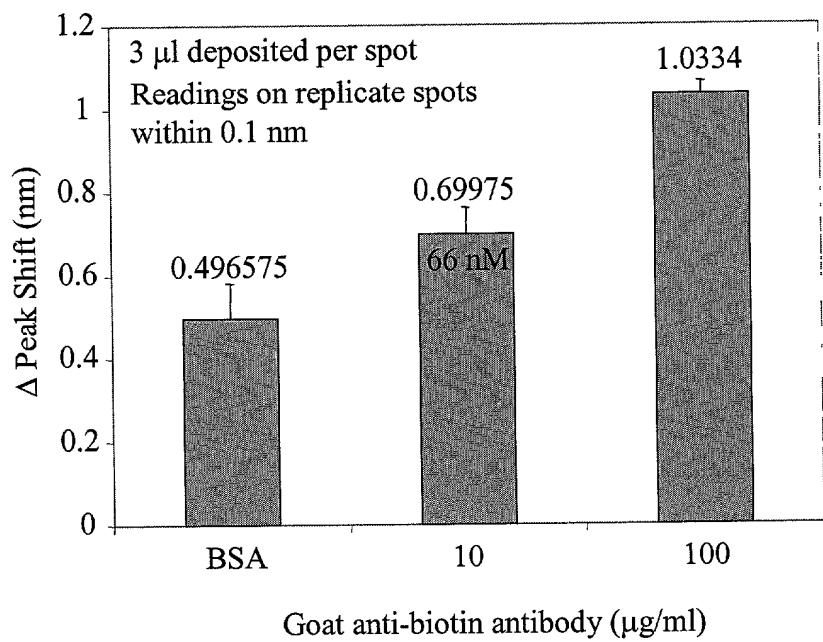


Figure 39A

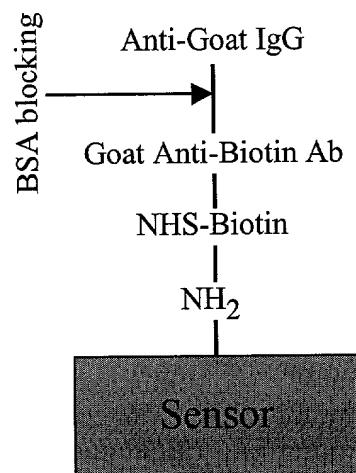


Figure 39B

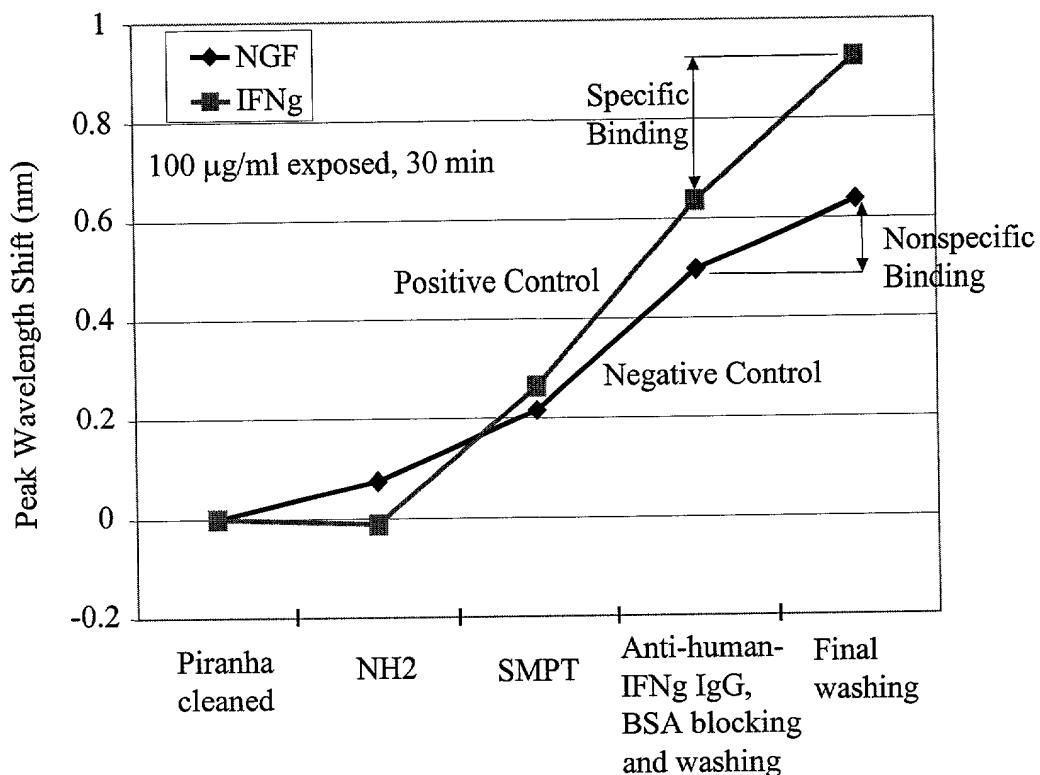


Figure 40A

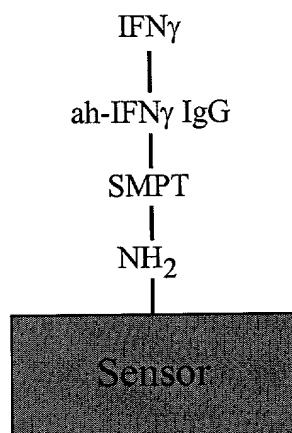


Figure 40B

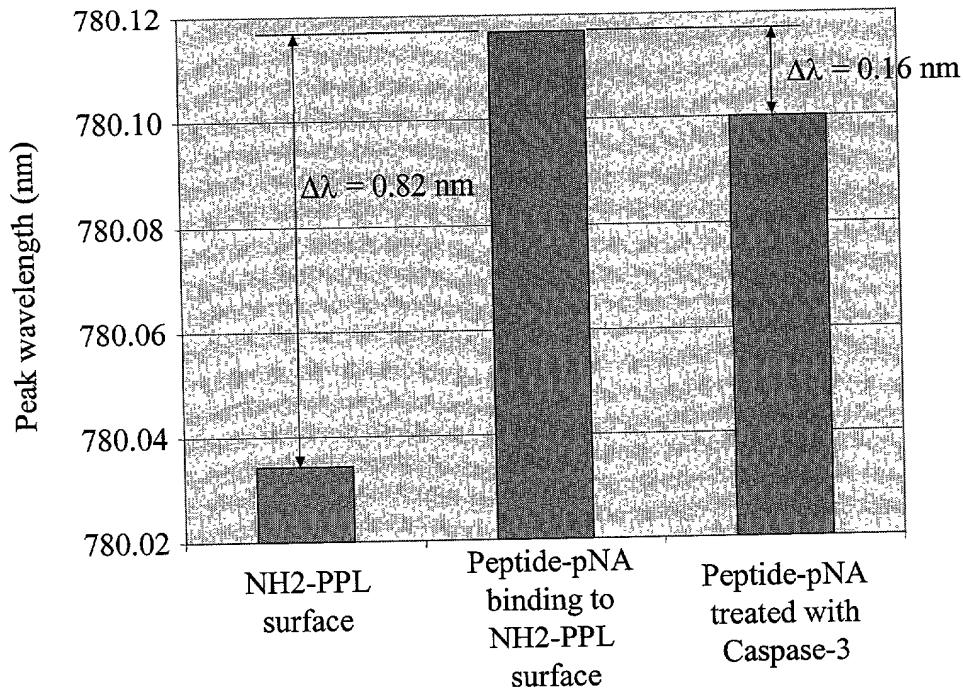


Figure 41A

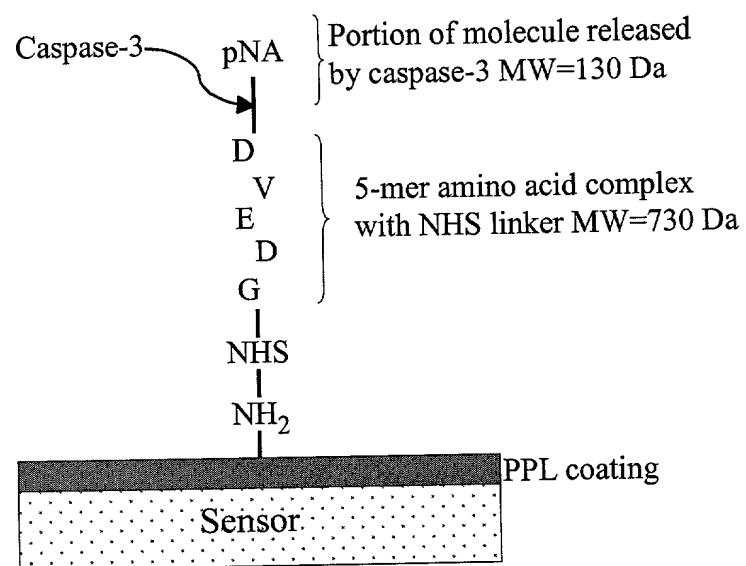


Figure 41B

Measured shifting of the resonant wavelength caused by the binding of various biomolecular layers.

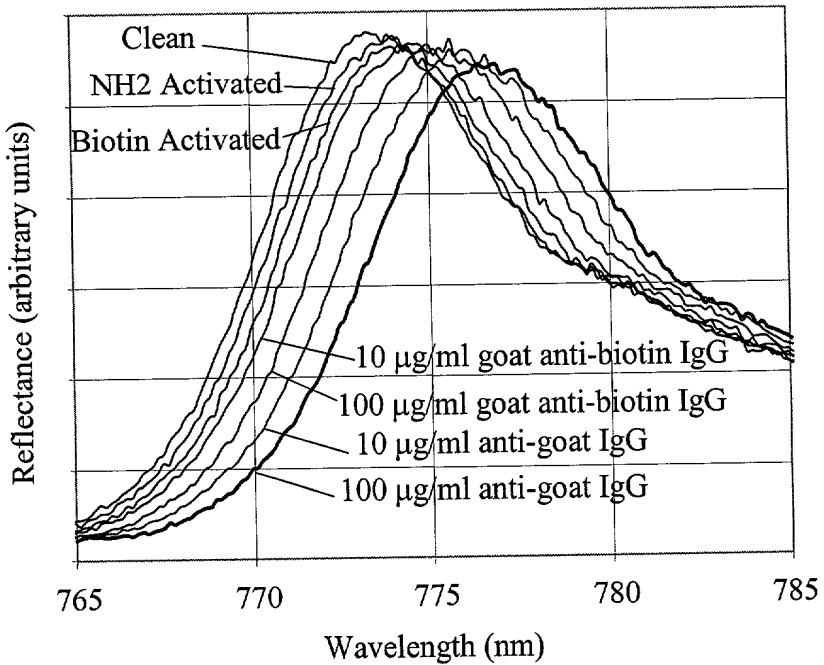


Figure 42A

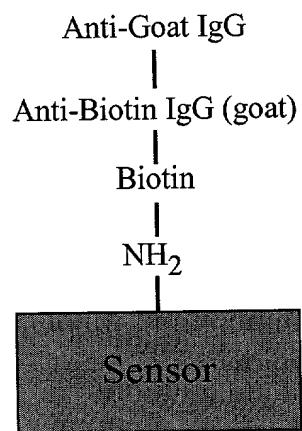


Figure 42B

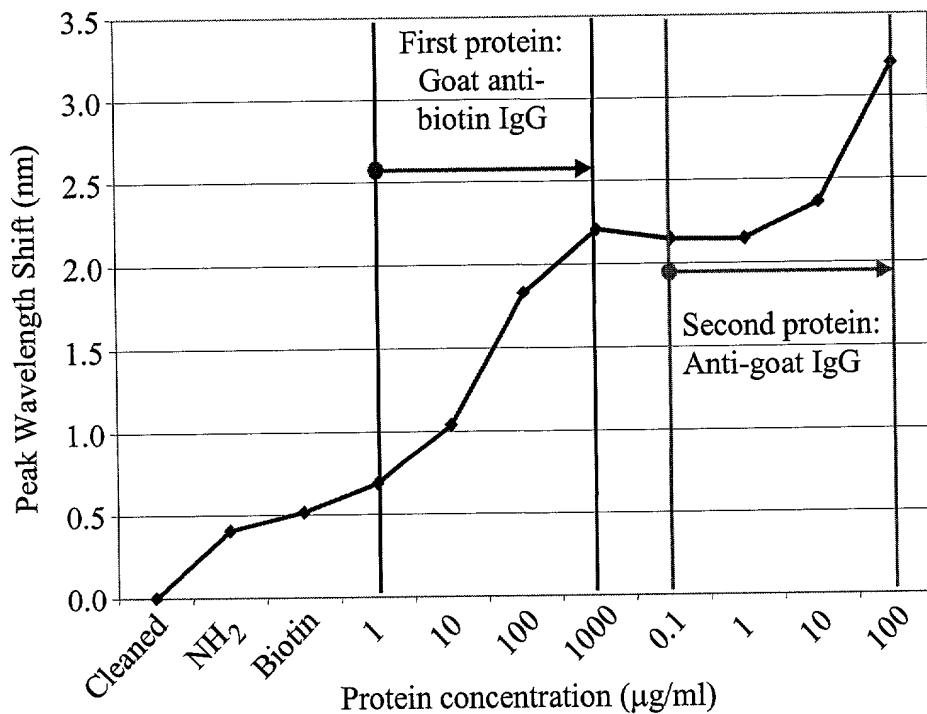


Figure 43A

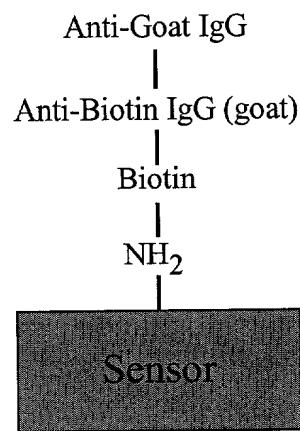


Figure 43B

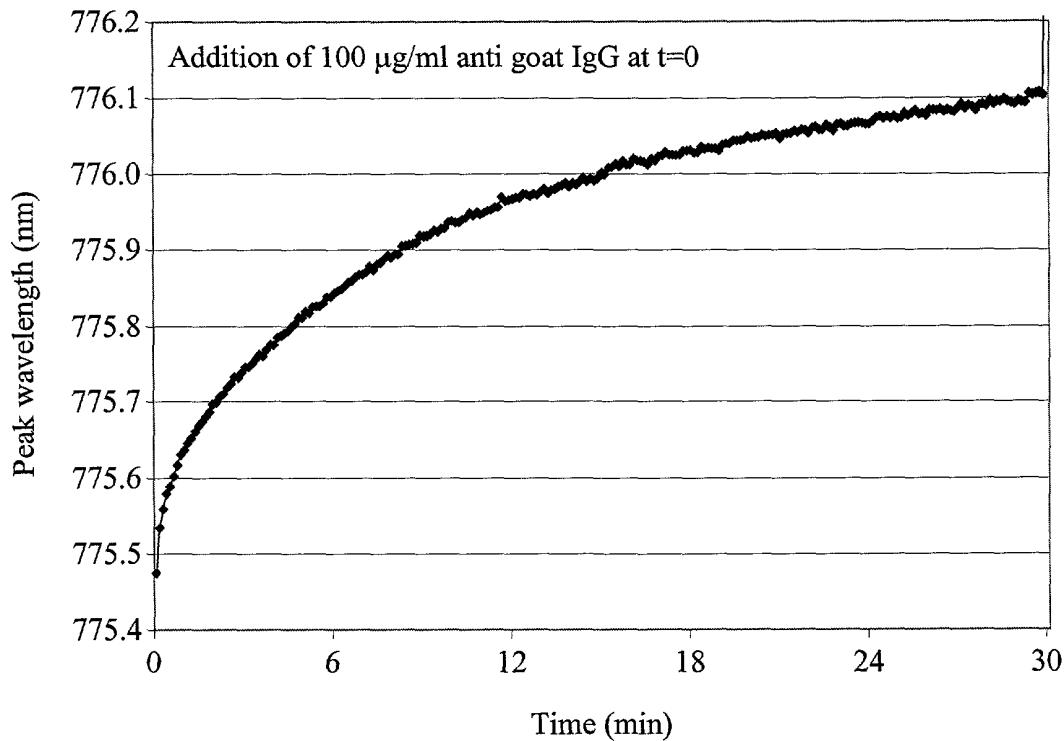


Figure 44A

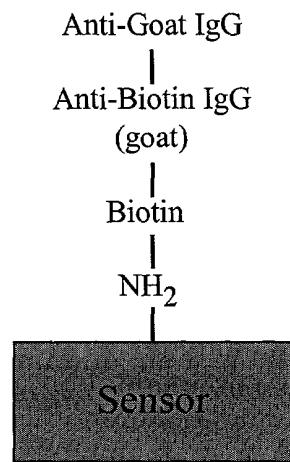


Figure 44B

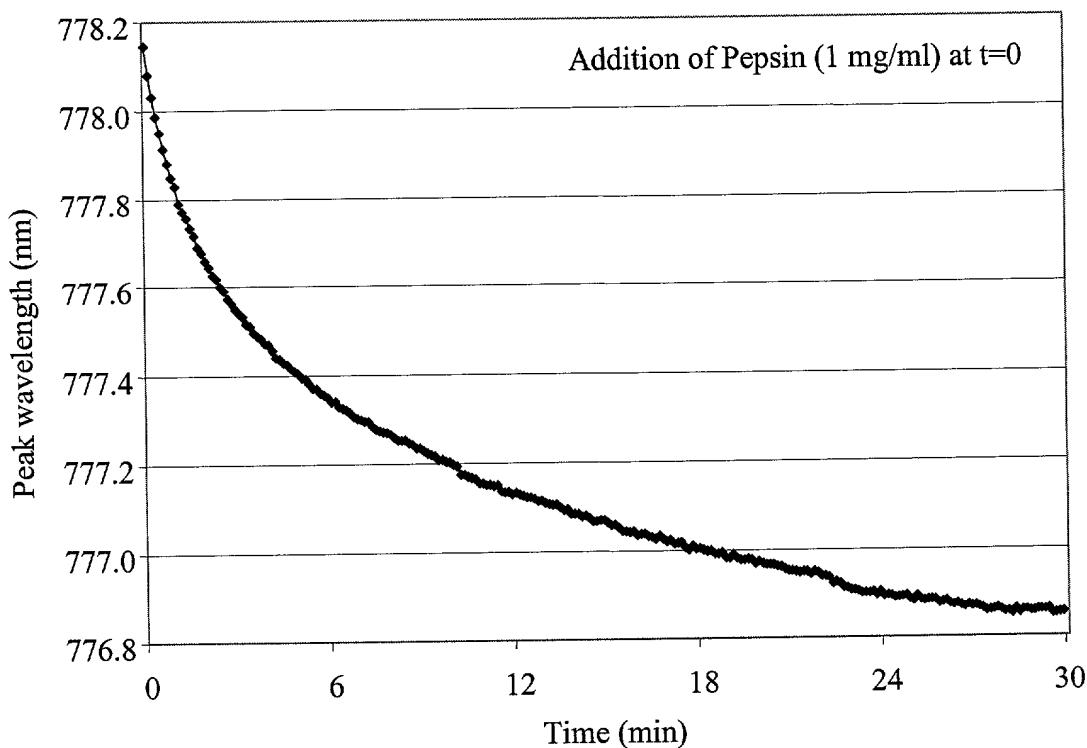


Figure 45A

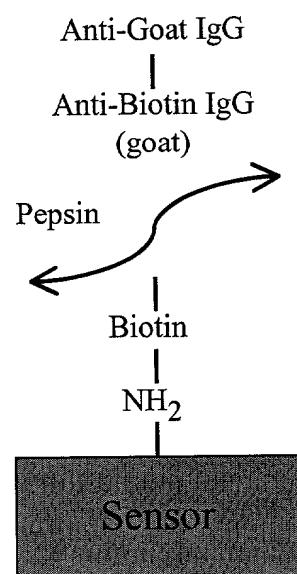


Figure 45B

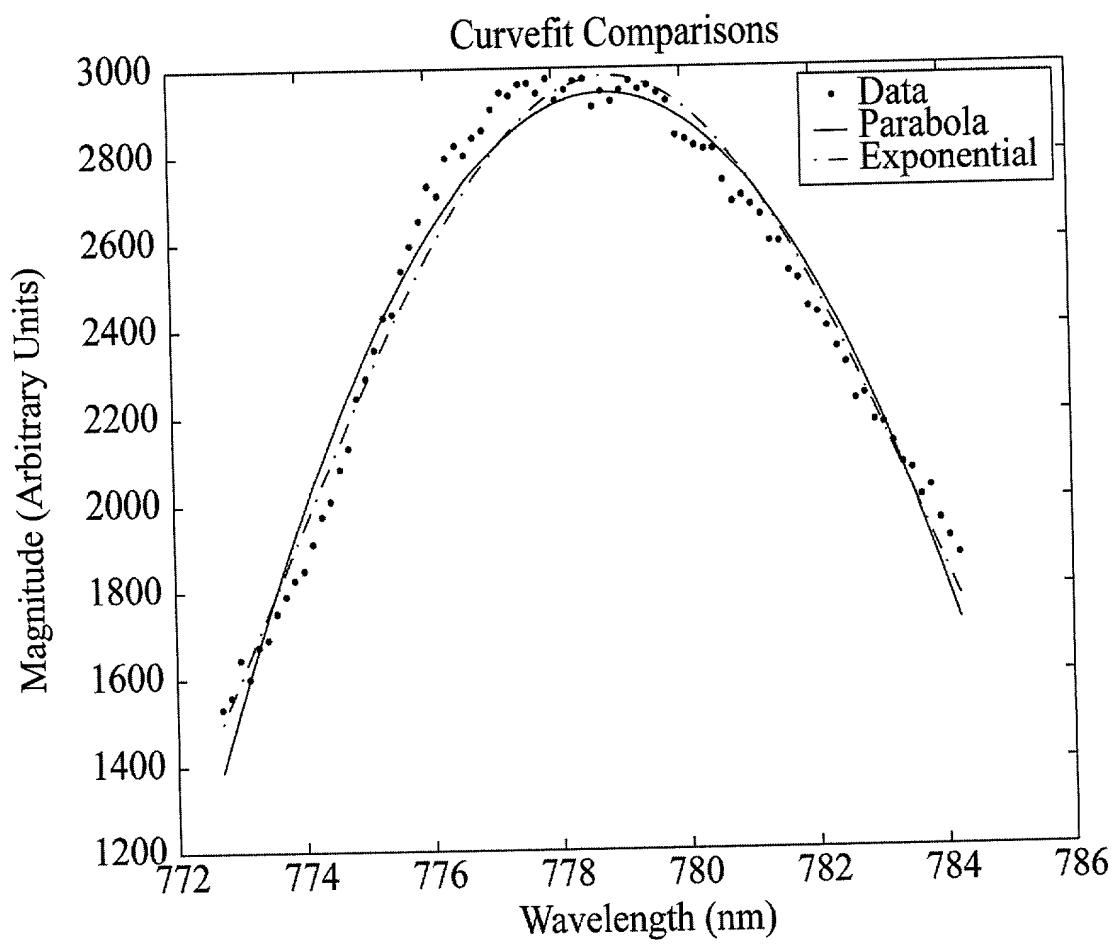


Figure 46

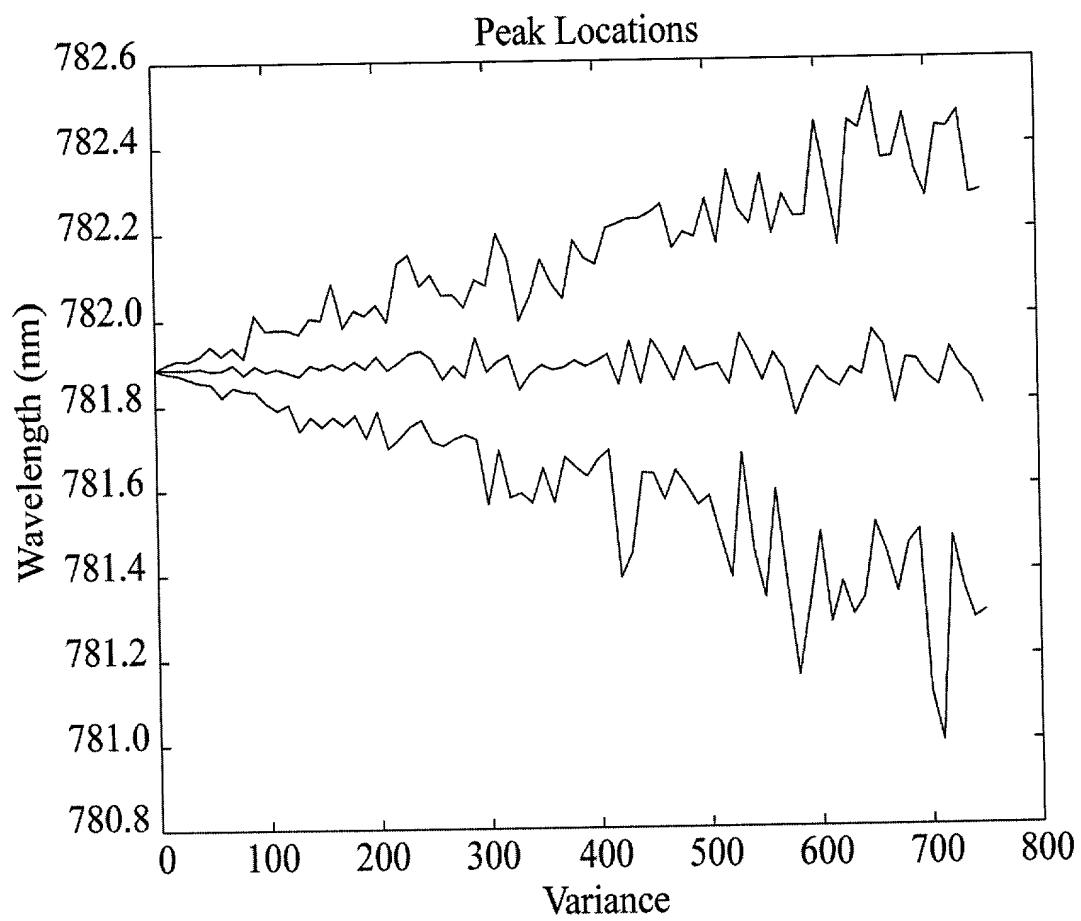
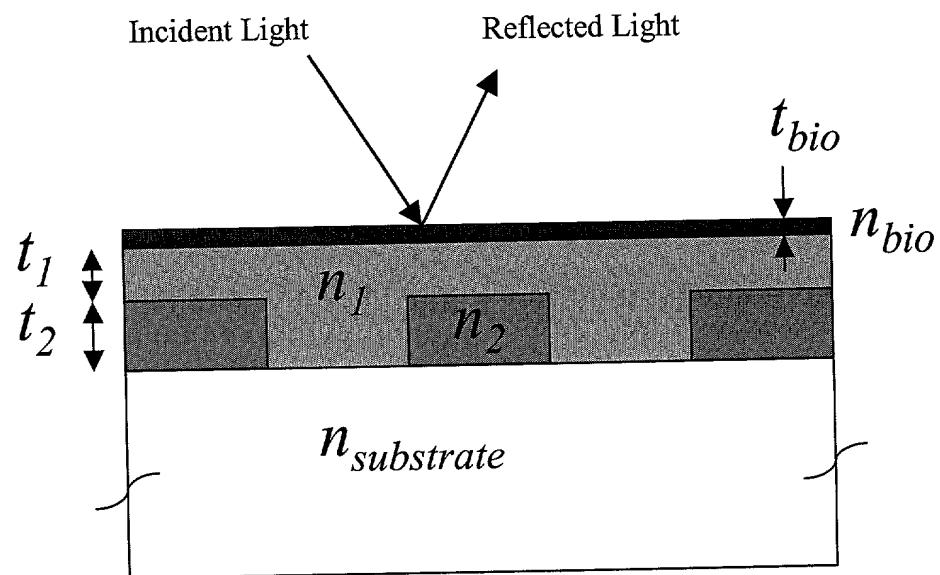


Figure 47



Material 1 = Electrical Insulator (photoresist, epoxy, glass)

Material 2 = Indium tin oxide conductor

Substrate = Glass

Figure 48

Concentric Circle Design

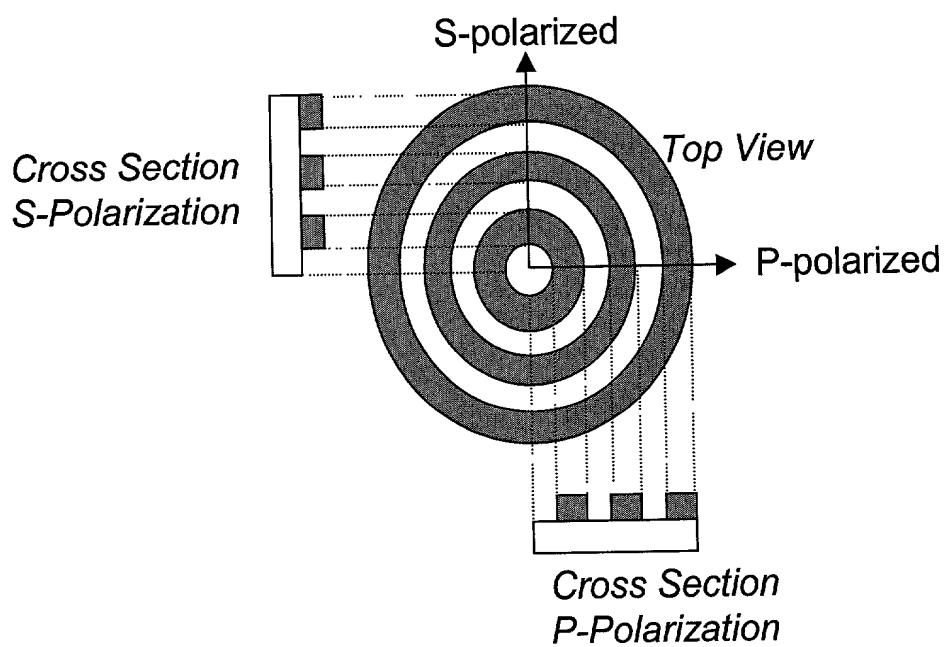


Figure 49

Hexagonal Grid Design

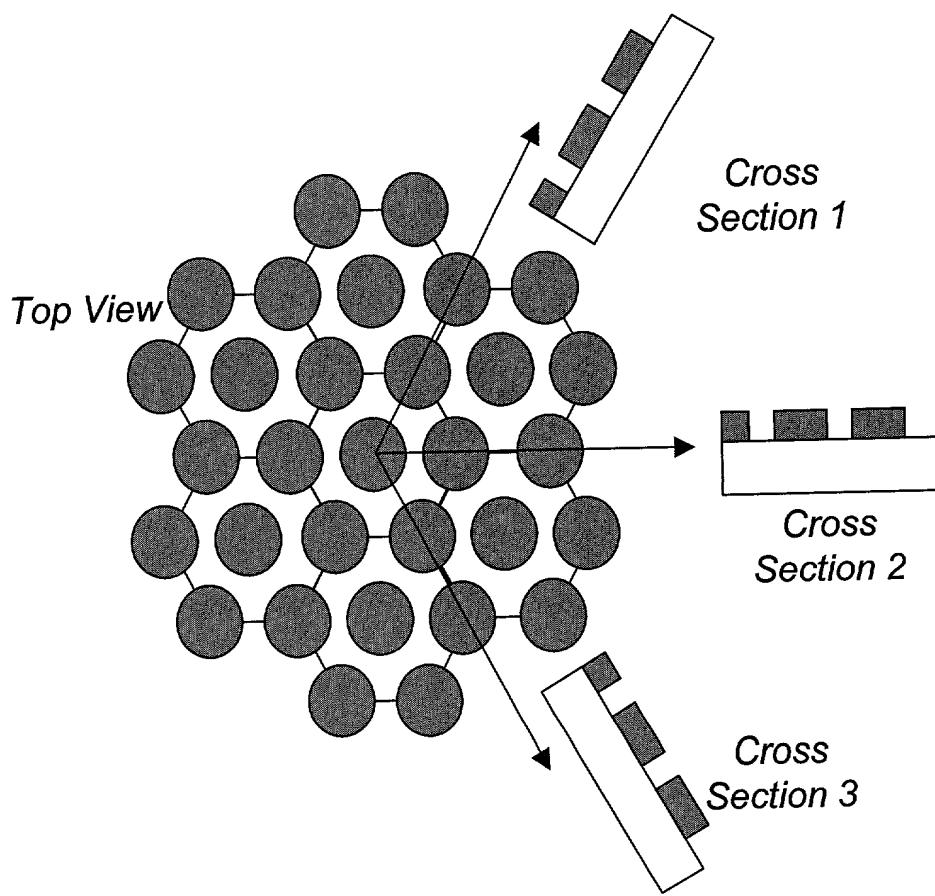


Figure 50

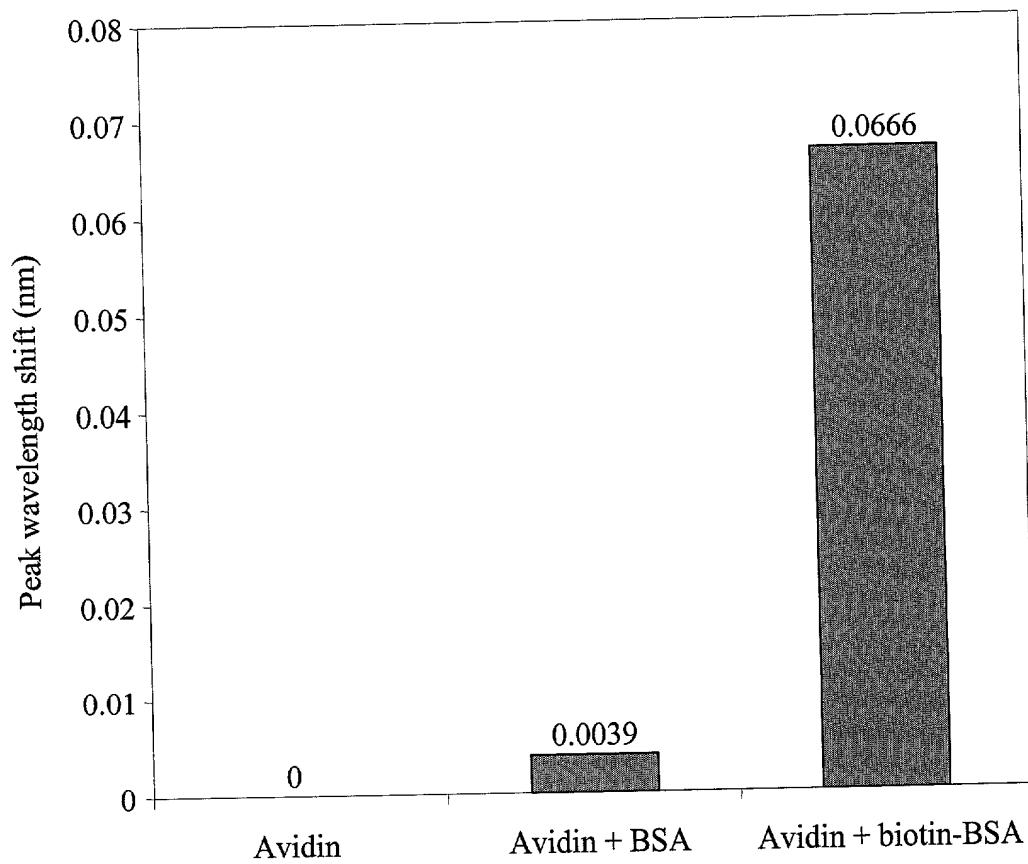


Figure 51

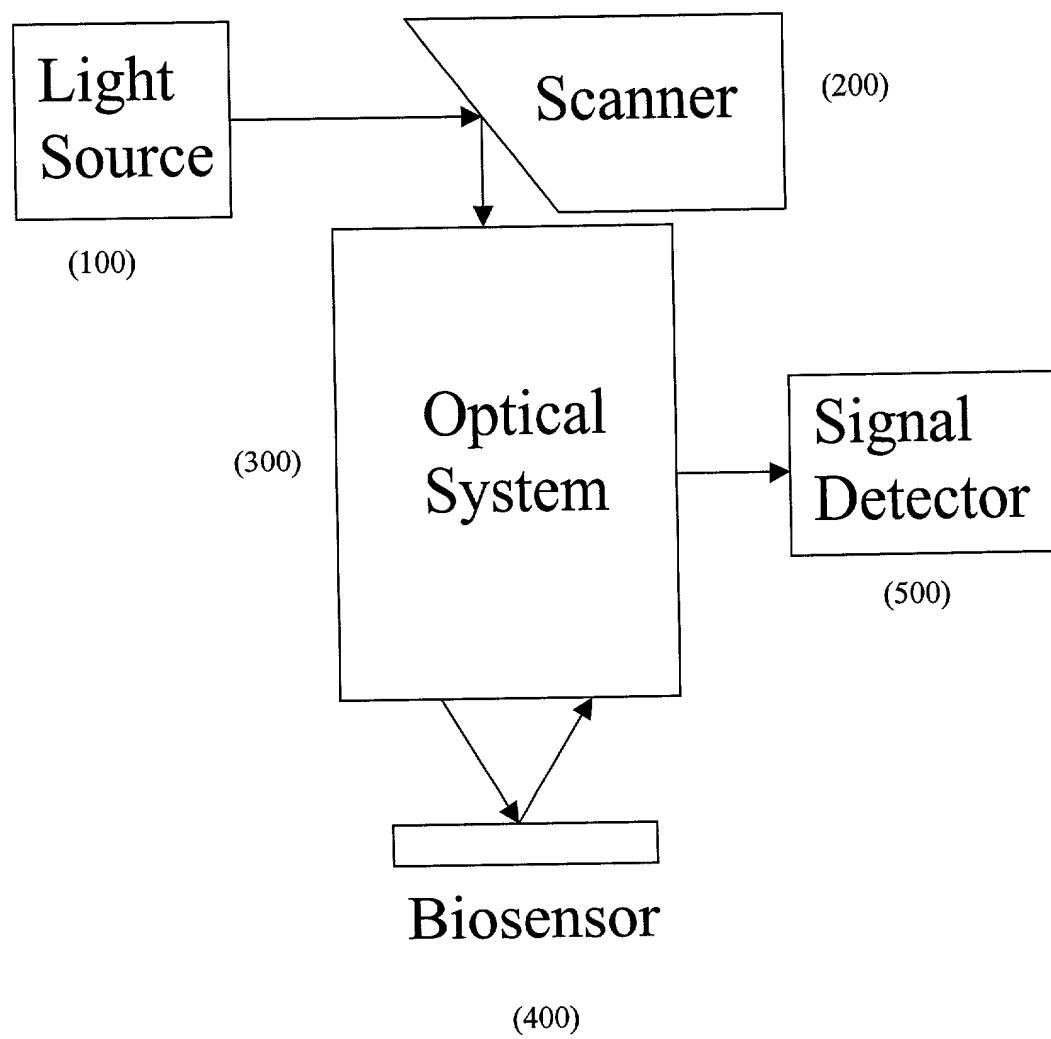


Figure 52